IEI Technology Corp.

MODEL:

# AFOLUX M Series

**7"~19" Multimedia Touch Monitor with Built-in Speakers, VGA, Component, Composite, S-Video and DVI-D Input IP 64 Protection**

# User Manual

Rev. 1.12 – 10 March, 2011

RoHS Lead Free

# Revision

| Date | Version | Changes |
|---|---|---|
| 10 March, 2011 | 1.12 | Updated Section 7.2 7-inch to 12.1-inch Driver Installation and Configuration |
| 29 September, 2009 | 1.11 | Added screw torque warning |
| 05 December, 2007 | 1.10 | Added AFL-10M model information<br>Added USB touch screen feature to 7” to 12.1” models<br>Added USB touch screen models for 15” to 19” models<br>Added smartOSD function and smartOSD appendix<br>Added 7” to 12.1” model driver installation procedures<br>Added screen calibration procedures |
| 30 June, 2007 | 1.00 | Initial release |

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# Manual Conventions

**WARNING!**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word “warning” is written as “**WARNING**,” both capitalized and bold and is followed by text. The text is the warning message. A warning message is shown below:

**WARNING:**

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the AFL series monitor or personal injury to the user. Please take warning messages seriously.

**CAUTION!**

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the AFL series monitor. Cautions are easy to recognize. The word “caution” is written as “**CAUTION**,” both capitalized and bold and is followed. The italicized text is the cautionary message. A caution message is shown below:

**CAUTION:**

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the AFL series monitor. Please take caution messages seriously.

**NOTE:**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes. Notes are easy to recognize. The word “note” is written as “**NOTE**,” both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:

**NOTE:**

This is an example of a note message. Notes should always be read. Notes contain critical information about the AFL series monitor. Please take note messages seriously.

# Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the AFL M series from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the AFL M series package.

- 1 x AFL M Series industrial LCD monitor
- 1 x Power adapter
- 1 x Power cord
- 1 x DVI cable
- 1 x VGA cable
- 1 x Component cable
- 1 x Audio cable
- 1 x User manual and driver CD
- 1 x Remote control
- 1 x Screw set
- 1 x Wire strain bands
- 1 x Touch Panel RS-232 Cable / Touch Pen / Driver CD-ROM (T-R models only)
- 1 x Touch Panel USB Cable (for AFL-07M/T-R, AFL-08MH/T-R, AFL-10M/T-R, and AFL-12M/T-R)

Images of the above items are shown in **Chapter 5.3.3**.

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Chapter

1

# Introduction

## 1.1 AFL M Series LCD Monitor Overview

The AFL series industrial monitor is the latest member of IEI’s line of sophisticated LCD designs, and it has been improved to be RoHS compliant. The AFL series is designed to fit industrial automation, or any other applications that require minimum installation space and flexible configuration. The flat front panel provides IP 64 protection, which effectively wards off dust and water. Flexible analog or digital interfaces are provided for ease of connection with a management computer. Resistive type touch panels are optional. If remote/non-attentive control is preferred, RS-232 or USB interfaces can be used with customized adapter cables.

### 1.1.1 Added Features

The following features have been added to the ***Revision 11*** models described in this manual:

- 7” to 12.1” models all have both RS-232 and USB touch screen options integrated into a single system.
- 15” – 19” have both USB touch screen models and RS-232 touch screen models.
- New firmware for the IEI smartOSD function is integrated into all **revision 11** (and above) AFOLUX monitors in the AFOLUX series.

### 1.1.2 Standard Features

Some of the features of the AFL series industrial monitor include:

- 7”/8.4”/10.4”/12.1”/15”/17”/19” TFT LCD
- Picture in Picture (PiP) support
- Fully functional OSD remote control
- Built-in speakers
- Multiple input interfaces including
  - Analog VGA
  - Audio line-in
  - Component Video
  - S-Video
  - Composite

- DVI-D (AFL-15M/17M/19M models only)

- Support wall/panel/rack/stand/arm mounting
- Silver color
- IP 64 compliant front panel
- RoHS compliant
- Integrated auto-dimming control sensor (AFL-15M/17M/19M models only)
- Optional resistive type RS-232/USB touch panel

### 1.1.3 IEI smartOSD

IEI smartOSD is a proprietary On-Screen-Display (OSD) software solution from IEI that enables easy monitor setting adjustments in a Windows environment. IEI smartOSD delivers excellent performance and provides more flexibility for adjusting the monitor than the typical OSD hardware solutions. smartOSD also allows monitor settings such as brightness, contrast, screen position, size and color gain to be read and changed over a normal video cable (VGA or DVI).

### 1.1.4 Model Variations

The AFL Series has sixteen models variations listed in **Table 1-1**.

**NOTE:**

The smartOSD function is only supported by Revision 11 models and above

| Model Number | LCD Size | Max. Resolution | Brightness | Touch Screen |
|---|---|---|---|---|
| **AFL-07M** | 7” | 800 x 480 | 350cd/m$^2$ | No |
| **AFL-07M/T-R** | 7” | 800 x 480 | 350cd/m$^2$ | Yes (USB or RS-232) |
| **AFL-08MH** | 8.4” | 800 x 600 | 450cd/m$^2$ | No |
| **AFL-08MH/T-R** | 8.4” | 800 x 600 | 450cd/m$^2$ | Yes (USB or RS-232) |
| **AFL-10M** | 10.4” | 800 x 600 | 400cd/m$^2$ | No |

| | | | | |
|---|---|---|---|---|
| **AFL-10M/T-R** | 10.4” | 800 x 600 | 400cd/m$^2$ | Yes (USB or RS-232) |
| **AFL-12M** | 12.1” | 1024 x 768 | 450cd/m$^2$ | No |
| **AFL-12M/T-R** | 12.1” | 1024 x 768 | 450cd/m$^2$ | Yes (USB or RS-232) |
| **AFL-15M** | 15” | 1024 x 768 | 350cd/m$^2$ | No |
| **AFL-15M/T-R** | 15” | 1024 x 768 | 350cd/m$^2$ | Yes (RS-232 only) |
| **AFL-15M-USB/T-R** | 15” | 1024 x 768 | 350cd/m$^2$ | Yes (USB only) |
| **AFL-17M** | 17” | 1280 x 1024 | 300cd/m$^2$ | No |
| **AFL-17M/T-R** | 17” | 1280 x 1024 | 300cd/m$^2$ | Yes (RS-232 only) |
| **AFL-17M-USB/T-R** | 17” | 1280 x 1024 | 300cd/m$^2$ | Yes (USB only) |
| **AFL-19M** | 19” | 1280 x 1024 | 300cd/m$^2$ | No |
| **AFL-19M/T-R** | 19” | 1280 x 1024 | 300cd/m$^2$ | Yes (RS-232 only) |
| **AFL-19M-USB/T-R** | 19” | 1280 x 1024 | 300cd/m$^2$ | Yes (USB only) |

**Table 1-1: AFL Series Model Variants**

## 1.2 External Overview

The AFL series industrial monitors are durable devices that can be used in multiple industrial environments. The following sections describe the physical layout of the AFL series industrial monitors.

### 1.2.1 Front View

The front of the AFL series industrial monitor is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame. **Figure 1-1** and **Figure 1-2** shows the LCD monitor front view of AFL-12M and AFL-15M.

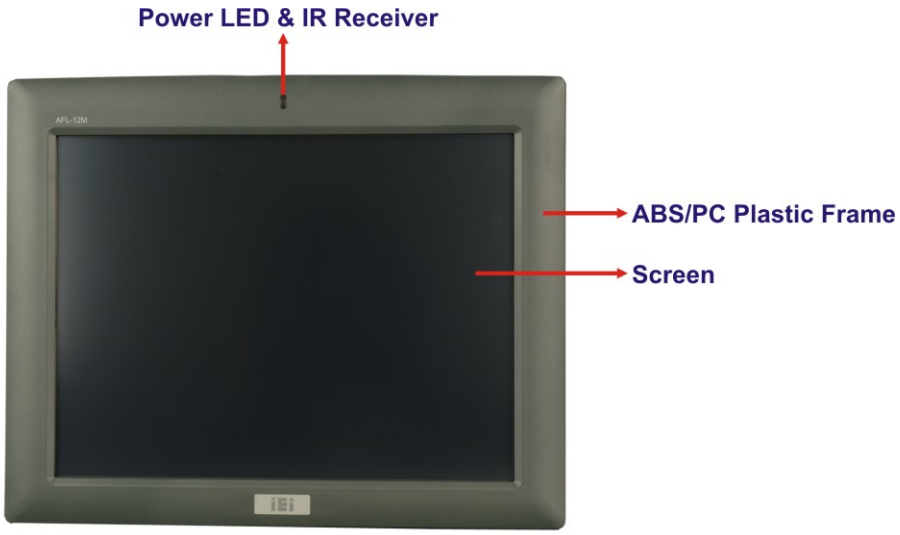



**Figure 1-1: AFL-12M Front View**

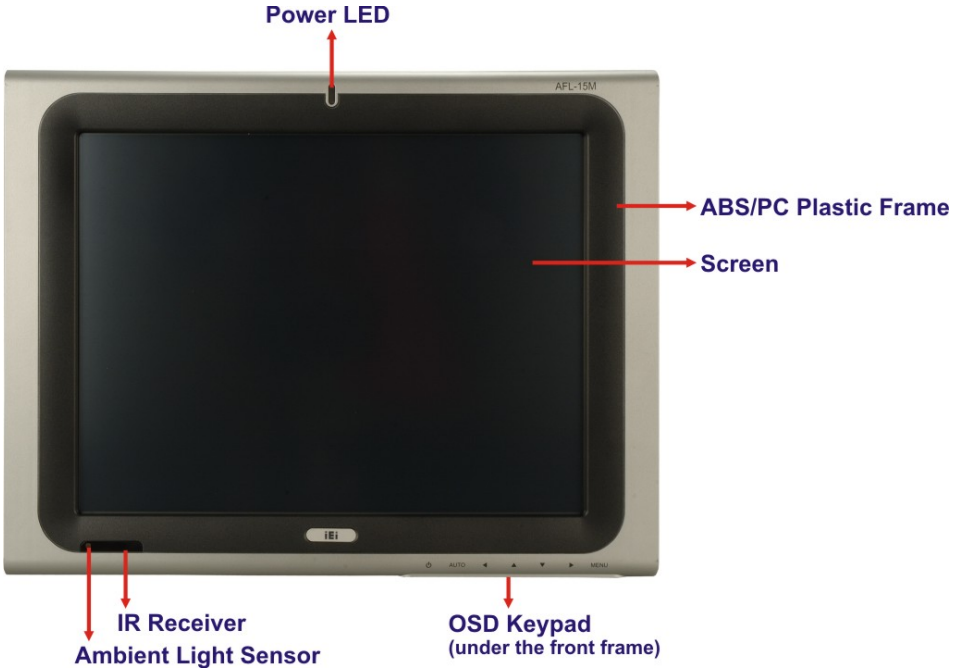



**Figure 1-2: AFL-15M Front View**

### 1.2.2 Rear View

The rear panel features fan ventilation holes and four retention screw holes that support a wall-mounting bracket. The AFL-12M retention screw holes are shown in **Figure 1-3**.

Figure 1-3: AFL-12M Rear View

## 1.3 Series Specifications

**Table 1-2** shows the AFL Series specifications.

| Model | AFL-07M | AFL-08MH | AFL-10M | AFL-12M | AFL-15M | AFL-17M | AFL-19M |
|---|---|---|---|---|---|---|---|
| LCD Size | 7” | 8.4" | 10.4" | 12.1" | 15" | 17" | 19" |
| Input Interface | Composite<br>YPbPr<br>S-Video<br>VGA | Composite<br>YPbPr<br>S-Video<br>VGA | Composite<br>YPbPr<br>S-Video<br>VGA | Composite<br>YPbPr<br>S-Video<br>VGA | Composite<br>YPbPr<br>S-Video<br>VGA<br>DVI-D | Composite<br>YPbPr<br>S-Video<br>VGA<br>DVI-D | Composite<br>YPbPr<br>S-Video<br>VGA<br>DVI-D |
| Max. Resolution | 800x480 | 800x600 | 800x600 | 1024x768 | 1024x768 | 1280x1024 | 1280x1024 |
| Brightness (cd/m2) | 350 | 450 | 400 | 450 | 350 | 300 | 300 |
| Contrast | 400:1 | 500:1 | 500:1 | 700:1 | 400:1 | 800:1 | 800:1 |
| LCD Color | 262K | 262K | 262K | 262K | 262K | 16.7M | 16.7M |
| Pixel Pitch (mm) | 0.1905 | 0.213 | 0.264 | 0.240 | 0.297 | 0.264 | 0.294 |
| View Angle (H / V) | 140/100 | 120/100 | 120/100 | 160/160 | 120/100 | 160/160 | 160/160 |
| Backlight MTBF (Hrs) | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 |
| Front Frame | ABS/PC | ABS/PC | ABS/PC | ABS/PC | ABS/PC | ABS/PC | ABS/PC |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Chassis** | **Aluminum** | **Aluminum** | **Aluminum** | **Aluminum** | **Aluminum** | **Aluminum** | **Aluminum** |
| **Audio In** | **AMP 1.5W + AMP 1.5W (internal speaker)** | | | | | **AMP 3W + AMP 3W (internal speaker)** | |
| **Power Adapter** | **36W** | **36W** | **36W** | **36W** | **60W** | **60W** | **60W** |
| **AD Board** | **AV-9962** | **AV-9962** | **AV-9962** | **AV-9962** | **AV-6962** | **AV-6962** | **AV-6962** |
| **Mounting** | **Panel Rack Wall Stand Arm** | **Panel Rack Wall Stand Arm** | **Panel Rack Wall Stand Arm** | **Panel Rack Wall Stand Arm** | **Wall Stand Arm** | **Wall Stand Arm** | **Wall Stand Arm** |
| **OSD function** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** |
| **OSD Keypad** | **No** | **No** | **No** | **No** | **Yes** | **Yes** | **Yes** |
| **IR Sensor** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** |
| **Ambient Light Sensor** | **No** | **NO** | **No** | **No** | **Yes** | **Yes** | **Yes** |
| **Dimension (WxHxD) (mm)** | **226 x 140 x 40.18** | **233.86 x 183.86 x 41.09** | **276 x 227 x 50.7** | **304 x 246 x 49.5** | **393.06 x 308.06 x 61** | **428 x 350 x 65** | **469.94 x 382.46 x 67** |
| **Operating Temperature** | **0°C ~50°C** | **0°C ~50°C** | **0°C ~50°C** | **0°C ~50°C** | **0°C ~50°C** | **0°C ~50°C** | **0°C ~50°C** |
| **IP Level** | **IP 64** | **IP 64** | **IP 64** | **IP 64** | **IP 64** | **IP 64** | **IP 64** |
| **N/G Weight** | **0.88kg** | **1.14kg** | **1.33kg** | **2.12kg** | **3.2kg** | **5.0kg** | **5.6kg** |

**Table 1-2: AFL M Series Specifications**

## 1.4 Certifications

All AFL series industrial monitor models comply with the following international standards:

- RoHS
- IP 64

For a more detailed description of these standards, please refer to **Sections B.1** and **B.2**.

Chapter

2

# Mechanical Overview

## 2.1 Introduction

This chapter describes the general mechanical overview of the AFL series monitors including front and rear panel, available interfaces and overall dimensions.

## 2.2 Front View

The front of the AFL series industrial monitor is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame. The AFL series monitor also includes one sensor and one LED on the front panel:

- **Infrared Sensor**
  This sensor receives the signal from the remote control.
- **Power LED** lights up turned on in green when the LCD monitor is on.

**Figure 2-1** shows the LCD monitor front view of AFL-12M.

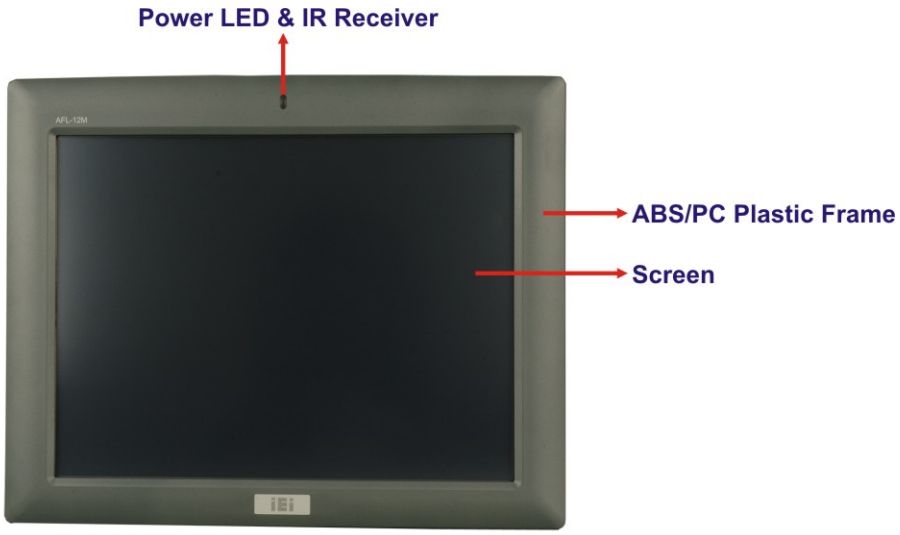



**Figure 2-1: AFL-12M Front View**

A control button panel (OSD) with the following control buttons is located horizontally on the bottom of the front frame of AFL-15M/17M/19M monitors:

- LCD On/Off
- Auto
- Left
- Up
- Down
- Right
- Menu

The AFL-15M/17M/19M monitors also provide auto-dimming function and include:

- **Ambient Light Sensor**
  The ambient light sensor detects the brightness of the ambient environment when the auto-dimming function is turned on.
- **Auto-Dimming LED**
  The auto-dimming LED lights up in red when the auto-dimming function is on.

**Figure 2-2** shows the LCD monitor front view of AFL-15M.

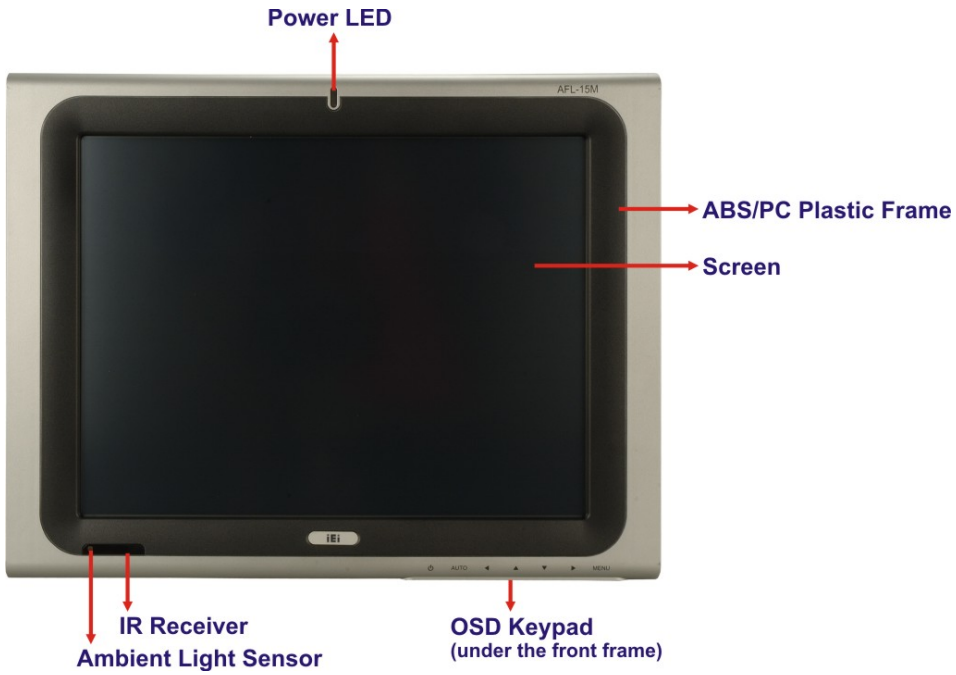



**Figure 2-2: AFL-15M Front View**

## 2.3 Bottom Panel

All peripheral device connectors are located on the bottom panel of the AFL series industrial monitor. The following sections describe the bottom panel variants and their associated connectors.

### 2.3.1 AFL-07M/08MH/10M/12M Connectors

The following is a list of the bottom panel peripheral device connectors used on the AFL-07M/08MH/10M/12M series industrial monitor.

- 12V power connector
- Audio jack
- Component video connector
- Composite video connector
- S-Video connector
- VGA connector
- RS-232 serial connector (T-R models only)
- USB connector (T-R models only)

### 2.3.2 AFL-15M/17M/19M Connectors

The following is a list of the bottom panel peripheral device connectors used on the AFL-15M/17M/19M series industrial monitor.

- 12V power connector
- Audio jack
- Component video connector
- Composite BNC connector
- DVI-D connector
- S-Video connector
- VGA connector
- RS-232 serial connector (T-R models only)
- USB connector (T-R models only)

**Figure 2-3** shows the bottom panel of the AFL-12M monitor and **Figure 2-4** shows the bottom panel of the AFL-15M monitor.

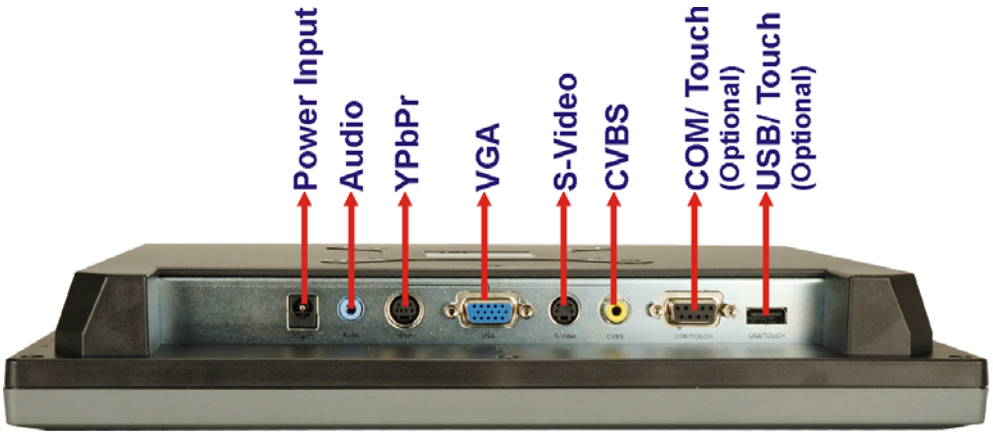



**Figure 2-3: AFL-12M Bottom Panel View**

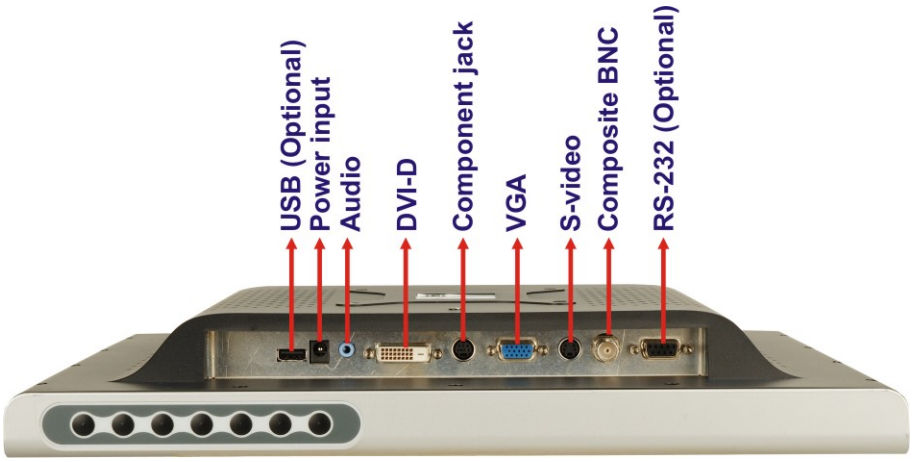



**Figure 2-4: AFL-15M Bottom Panel View**

## 2.4 Physical Dimensions

The following sections describe the physical dimensions for the AFL series industrial monitor.

### 2.4.1 General Physical Dimensions

General physical dimensions for the AFL series monitors are shown in **Table 2-1**.

| Model | Width (mm) | Height (mm) | Depth (mm) |
|---|---|---|---|
| AFL-07M | 226.00 | 140.00 | 40.18 |
| AFL-08MH | 233.86 | 183.86 | 41.09 |
| AFL-10M | 276.00 | 227.00 | 50.70 |
| AFL-12M | 304.00 | 246.00 | 49.50 |
| AFL-15M | 393.04 | 308.06 | 61.00 |
| AFL-17M | 428.00 | 350.00 | 65.00 |
| AFL-19M | 469.94 | 382.46 | 66.85 |

Table 2-1: General Physical Dimensions

### 2.4.2 AFL-07M Physical Dimensions

The physical dimensions of the AFL-07M are shown in **Figure 2-5**.

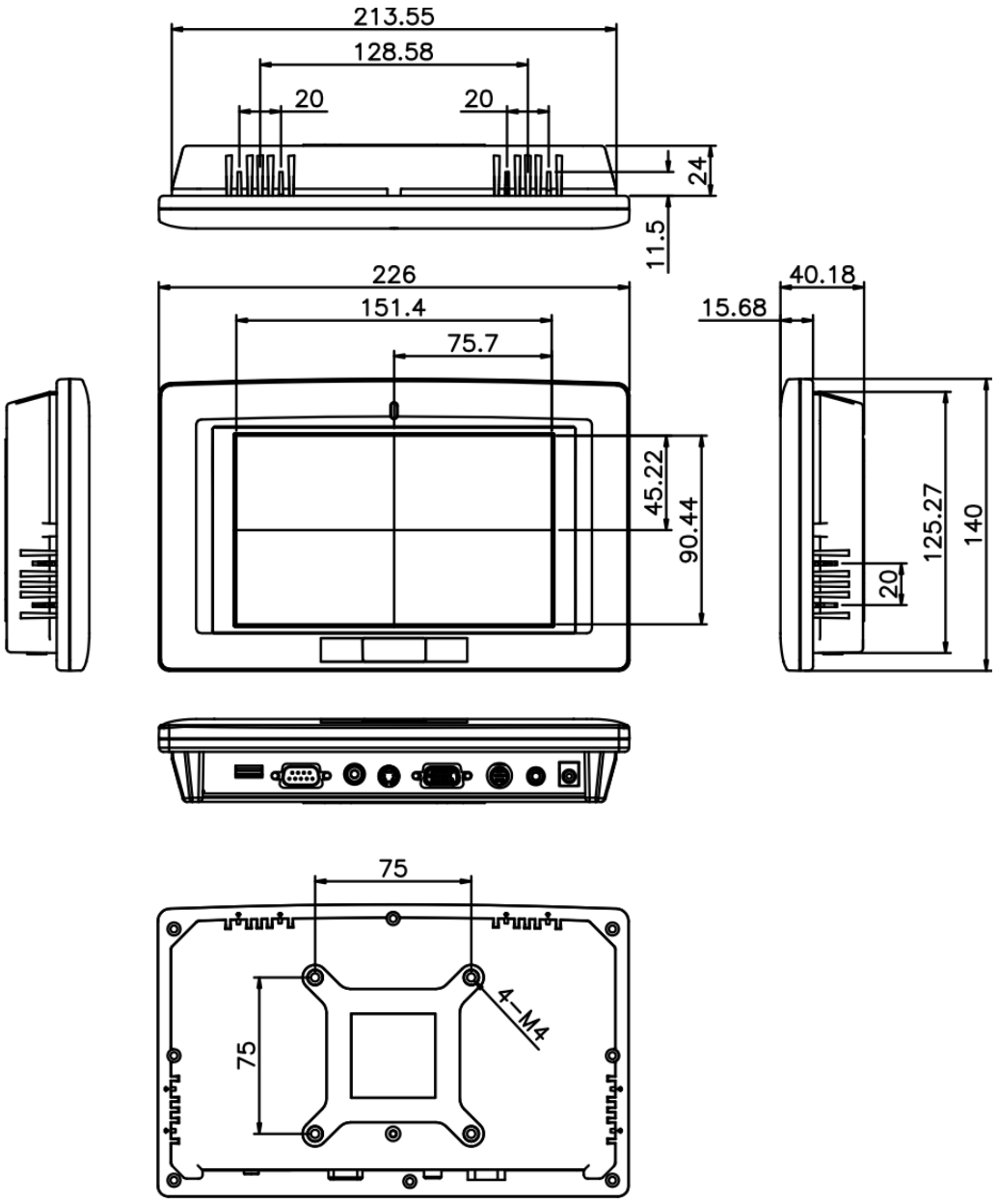



**Figure 2-5: AFL-07M Physical Dimensions (millimeters)**

### 2.4.3 AFL-08MH Physical Dimensions

The physical dimensions of the AFL-08MH are shown in **Figure 2-6**.

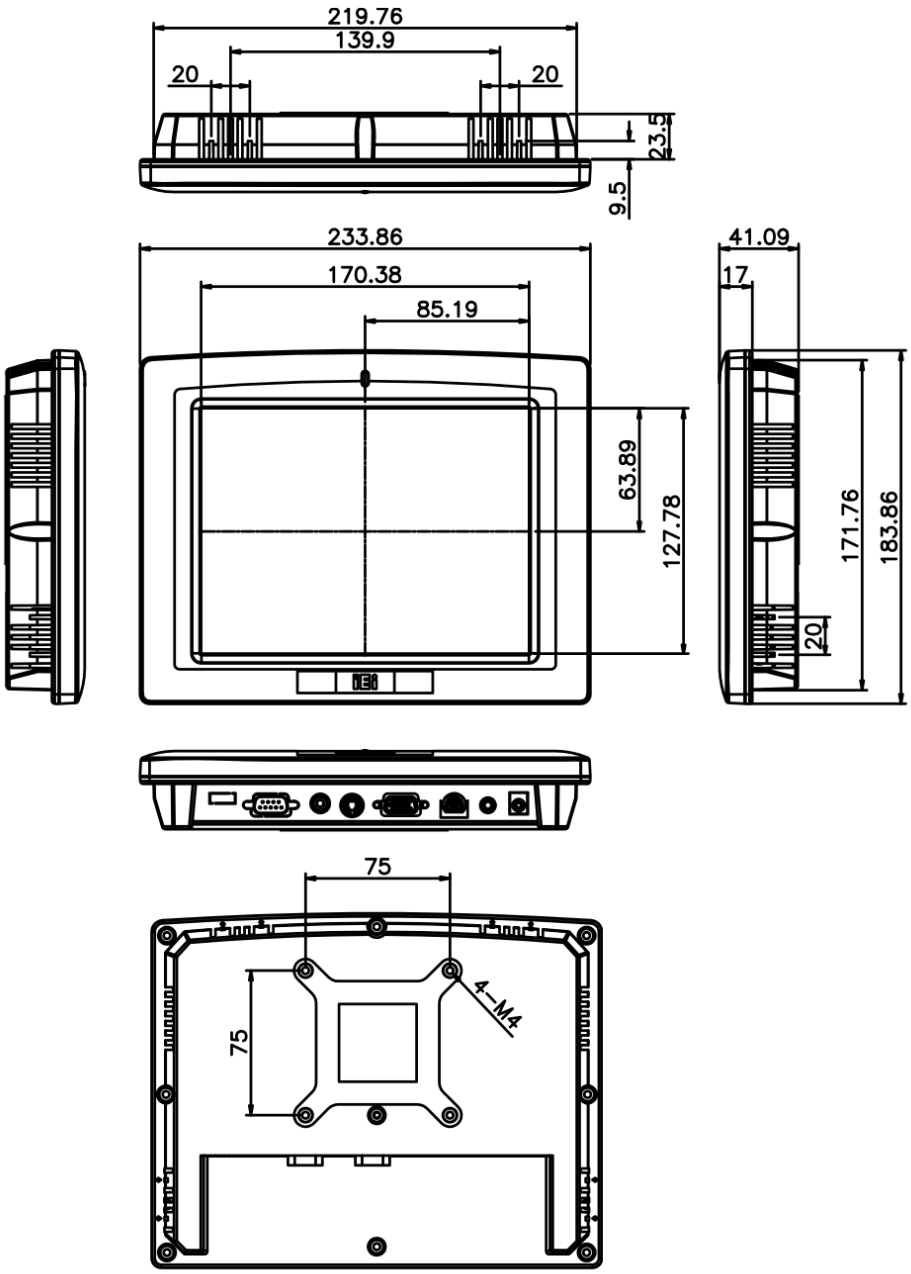



**Figure 2-6: AFL-08MH Physical Dimensions (millimeters)**

### 2.4.4 AFL-10M Physical Dimensions

The physical dimensions of the AFL-10M are shown in **Figure 2-7**.

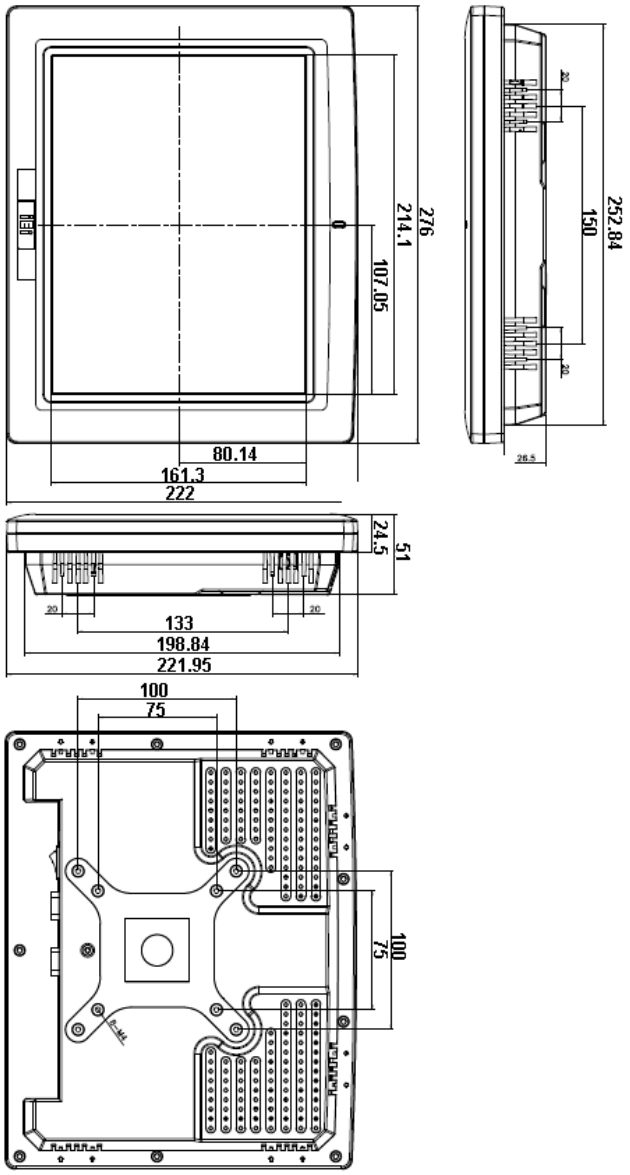



**Figure 2-7: AFL-10M Physical Dimensions (millimeters)**

### 2.4.5 AFL-12M Physical Dimensions

The physical dimensions of the AFL-12M are shown in **Figure 2-8**.

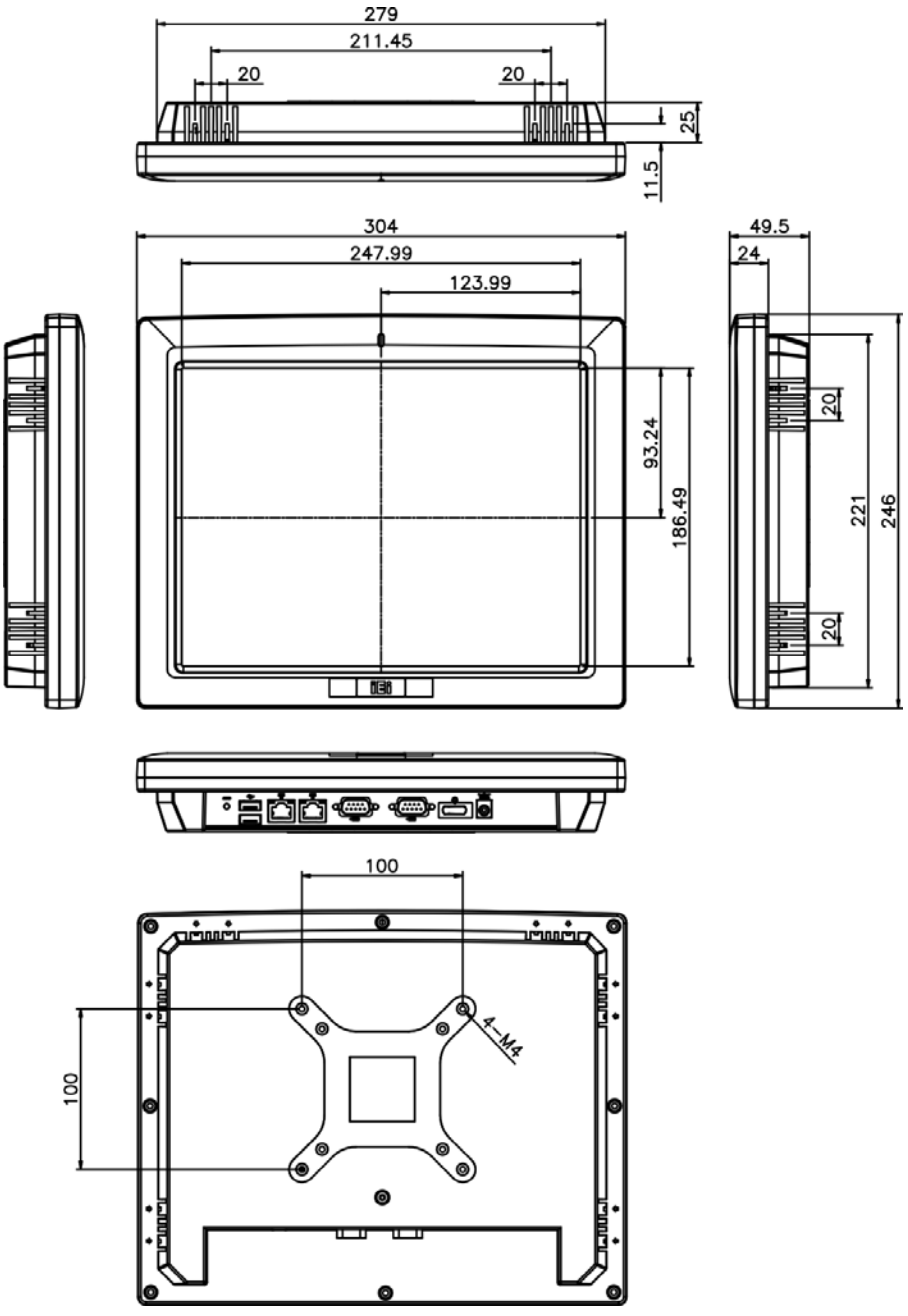



**Figure 2-8: AFL-12M Physical Dimensions (millimeters)**

### 2.4.6 AFL-15M Physical Dimensions

The physical dimensions of the AFL-15M are shown in **Figure 2-9**.

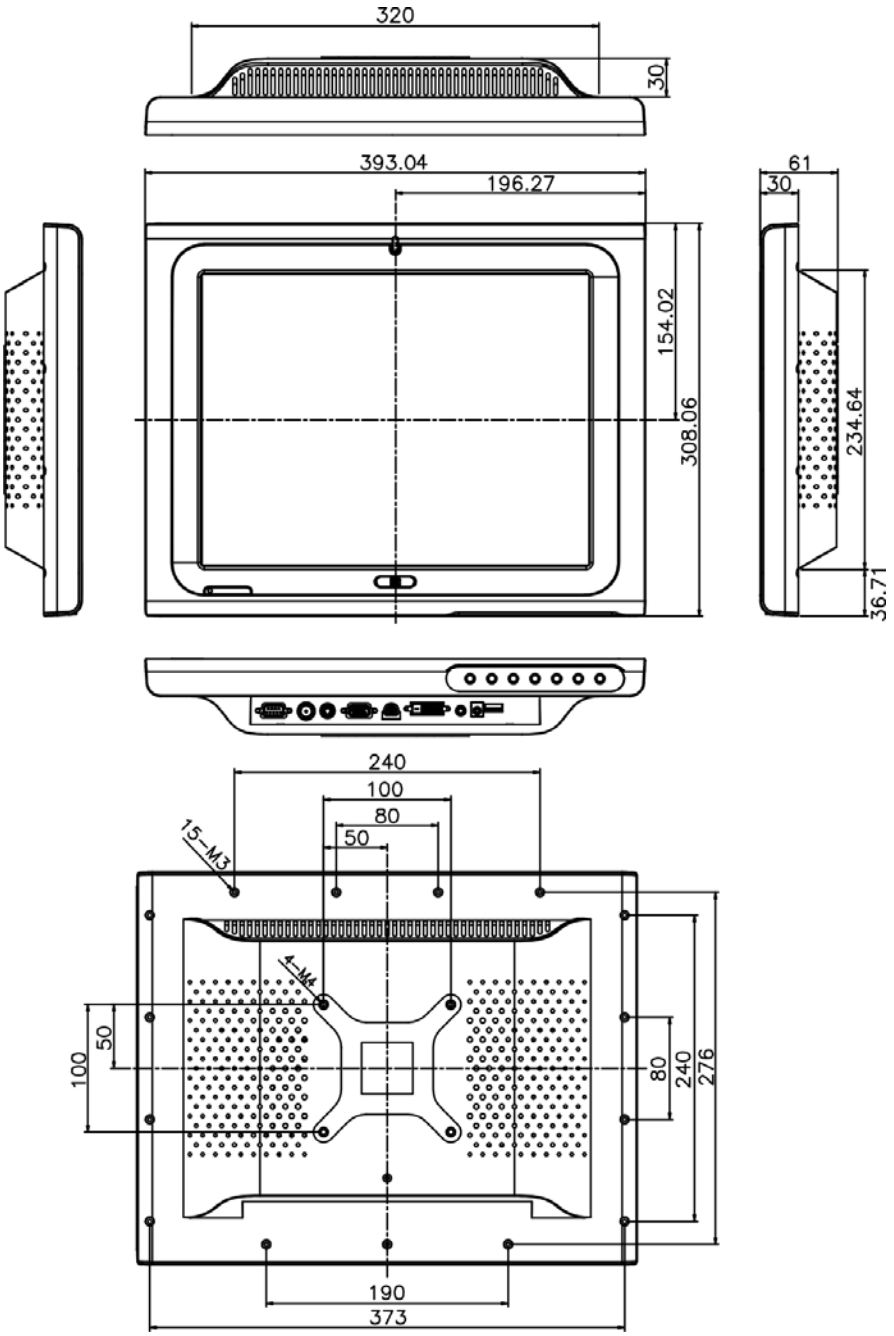



**Figure 2-9: AFL-15M Physical Dimensions (millimeters)**

### 2.4.7 AFL-17M Physical Dimensions

The physical dimensions of the AFL-17M are shown in **Figure 2-10**.

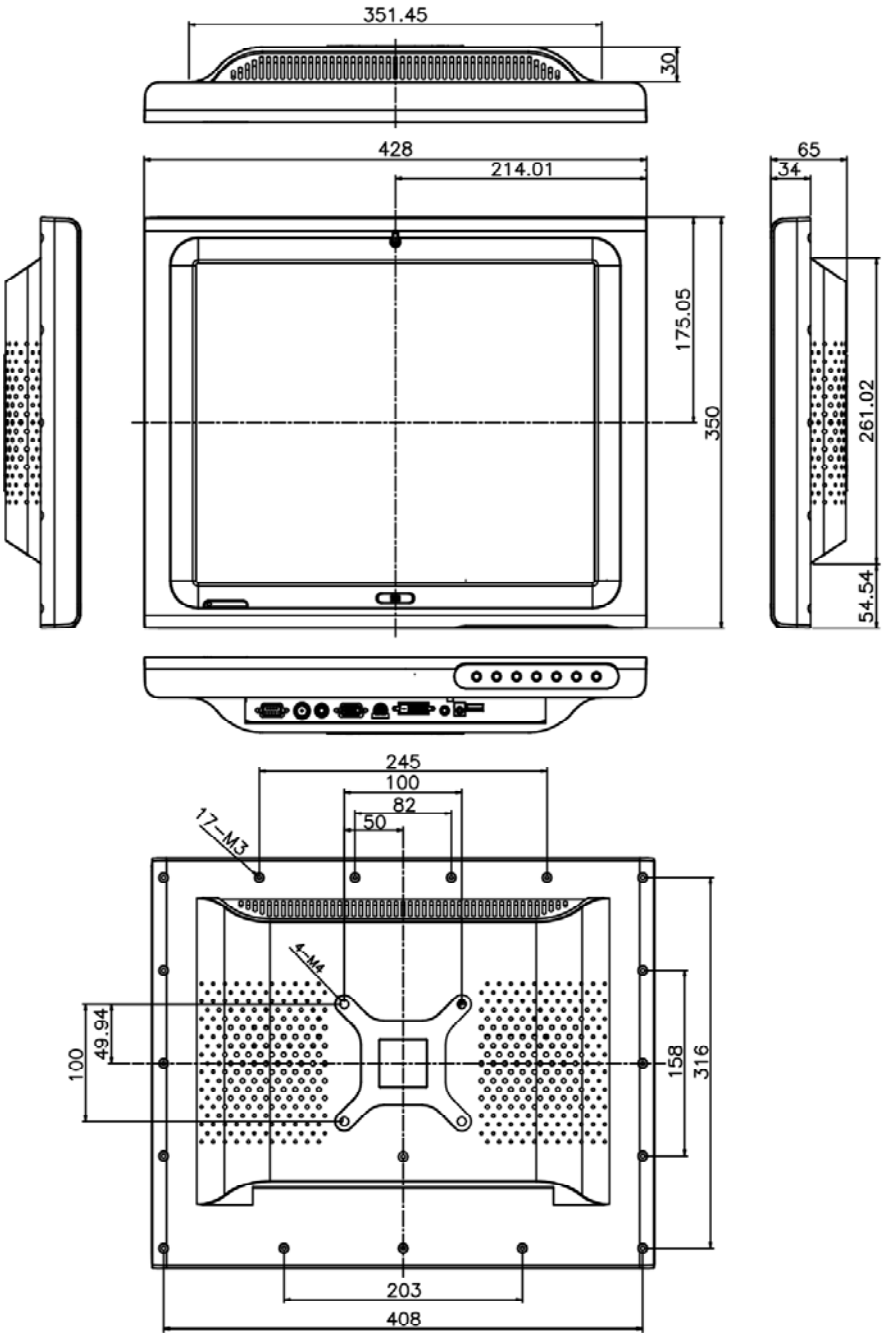



**Figure 2-10: AFL-17M Physical Dimensions (millimeters)**

### 2.4.8 AFL-19M Physical Dimensions

The physical dimensions of the AFL-19M are shown in **Figure 2-11**.

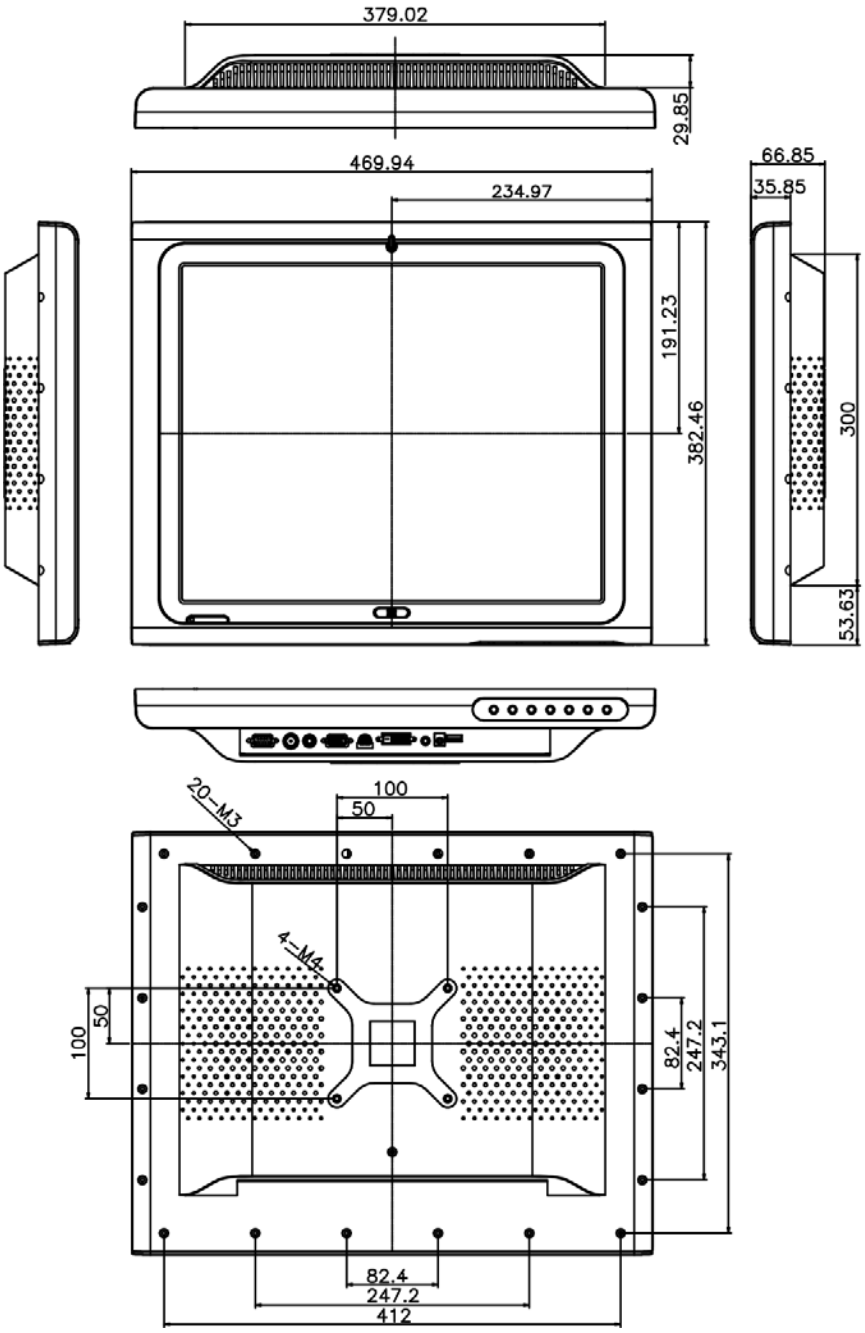



**Figure 2-11: AFL-19M Physical Dimensions (millimeters)**

## 2.5 Mounting Kits

The following sections describe the various optional mounting kits available for each model of the AFL series industrial monitor. Refer to **Section 5.6** for detailed instructions on the different mounting methods for the monitors.

**Table 2-2** lists the mounting kits available for the AFL series monitor.

| | AFL-07M | AFL-08MH | AFL-10M | AFL-12M | AFL-15M | AFL-17M | AFL-19M |
|---|---|---|---|---|---|---|---|
| **Panel Mounting kits** | AFLPK-08 | | AFLPK-12 | | AFLPK-15 | AFLPK-17 | AFLPK-19 |
| **Wall Mounting kits** | AFLWK-12 | | | | AFLWK-19 | | |
| **Rack Mounting Kits** | AFLRK-07 | AFLRK-08 | AFLRK-10 | AFLRK-12 | AFLRK-15 | AFLRK-17 | N/A |
| **LCD Monitor Stand** | STAND-A08 | | STAND-A12 | | STAND-A19/STAND-B19 | | |

**Table 2-2: AFL Series Mounting Kits**

## 2.6 Mounting Options

Each AFL series industrial monitor has a number of mounting holes or slots located on the back side of the ABS/PC frame or on the rear panel for mounting the monitor to a rack, panel, wall, arm or stand. The following sections describe the various mounting methods or each model of the AFL series industrial monitor.

### 2.6.1 Panel Mounting

AFL-07M, AFL-08MH, AFL-10M and AFL-12M models of the AFL series industrial monitor have a series of mounting slots located on the top and bottom panel for mounting the monitor to a panel.

**Table 2-3** lists the number of mounting clamps required to mount the monitor to a panel.

| Model | Mounting Clamps |
|---|---|
| AFL-07M | 4 |
| AFL-08MH | 6 |
| AFL-10M | 6 |
| AFL-12M | 6 |

**Table 2-3: Panel Mounting Clamps**

### 2.6.2 Rack and Cabinet Mounting

AFL-07M, AFL-08MH, AFL-10M and AFL-12M models of the AFL series industrial monitor have a series of holes located on the rear of the top and bottom panel for securing the monitor to the rack mounting kit.

**Table 2-4** lists the number of holes each monitor has to secure the monitor to the rack mounting kit.

| Model | Holes |
|---|---|
| AFL-07M | 4 |
| AFL-08MH | 6 |
| AFL-10M | 6 |
| AFL-12M | 6 |

**Table 2-4: Rack Mounting Holes**

### 2.6.3 Wall Mounting

Each model of the AFL series industrial monitor has four holes located on the rear panel for mounting the monitor to a wall.

**Figure 2-12** shows the typical methods for wall mounting.

**Figure 2-12: Typical Wall Mounting**

### 2.6.4 Monitor Arm or Stand Mounting

The AFL series industrial monitor has four mounting holes which are compatible with VESA FDMI (MIS-D 75 and/or MIS-D 100) and located on the rear panel for mounting the monitor to a monitor arm or stand.

Chapter

3

# LCD and Touch Panel Specifications

## 3.1 LCD Specifications

### 3.1.1 LCD Overview

The AFL series industrial monitors use the following LCD panels.

- **AFL-07M**: Data Image FG0700A1DSCWBGL1 7” WVGA TFT LCD
- **AFL-08MH**: AUO G084SN05 8.4” SVGA TFT LCD
- **AFL-10M**: TOSHIBA LTA104D182F 10.4" SVGA TFT LCD
- **AFL-12M**: CMO G121X1-L01 12.1” XGA TFT LCD
- **AFL-15M**: AUO G150XG01 15” XGA TFT LCD
- **AFL-17M**: AUO M170EG01 17” SXGA TFT LCD
- **AFL-19M**: AUO M190EG02 19” SXGA TFT LCD

Detailed specifications for the LCD screens are listed in the following sections.

### 3.1.2 AFL-07M LCD Specifications

**Table 3-1** lists the LCD specifications of the AFL-07M.

| Model | AFL-07M |
|---|---|
| Size | 7” |
| MFR/Model | Data Image FG0700A1DSCWBGL1 |
| Resolution | WVGA (800 x 480) |
| Active Area (mm) | 152.4 x 91.44 |
| Pixel Pitch (mm) | 0.1905 |
| Number of Colors | 262K |
| View Angle (H/V) | 140 / 100 |
| Brightness (cd/m2) | 350 |
| Contrast Ratio | 400:1 |
| Response Time (ms) (at 25C) | 15 (Tr)/20 (Tf) |
| Power Consumption (W) | 2.7 |
| Interface | 1ch TTL |
| Supply Voltage (V) | 3.3 |
| Backlight | 1 CCFL |

| | |
|---|---|
| Lamp Life (hrs) | 50,000 |
| Operating Temperature | 0℃~+50℃ |
| Operating Humidity | 8%~95%RH |
| Storage Temperature | -20℃~+60℃ |
| Storage Humidity | 5%~90%RH |
| Shock (Non-Operating) | 100G, 6ms, Half-sine wave |
| Vibration (Non-Operating) | 2.9G, 33.3~400Hz, Sine wave 15mins/axis, 3 direction |

**Table 3-1: AFL-07M LCD Specifications**

### 3.1.3 AFL-08MH LCD Specifications

**Table 3-2** lists the LCD specifications of the AFL-08MH.

| **Model** | **AFL-08MH** |
|---|---|
| Size | 8.4” |
| MFR/Model | AUO/G084SN05 |
| Resolution | SVGA (800 x 600) |
| Active Area (mm) | 170.4 x 127.8 |
| Pixel Pitch (mm) | 0.213 |
| Number of Colors | 262K |
| Color Saturation (NTSC%) | 45 |
| View Angle (H/V) | 120 / 100 |
| Brightness (cd/m2) | 450 |
| Contrast Ratio | 500:1 |
| Response Time (ms) (at 25C) | 10 (Tr)/25 (Tf) |
| Power Consumption (W) | 5.8 |
| Interface | 1ch LVDS |
| Supply Voltage (V) | 3.3 |
| Backlight | 2 CCFL |
| Lamp Life (hrs) | 50000 |
| Operating Temperature | 0℃~+50℃ |
| Operating Humidity | 8%~95%RH |

| | |
|---|---|
| Storage Temperature | -20℃ ~ +60℃ |
| Storage Humidity | 5% ~ 95%RH |
| Shock (Non-Operating) | 50G, 20ms, Half-sine wave |
| Vibration (Non-Operating) | 1.5G, 10 ~ 200 ~ 10Hz, Sine wave 30mins/axis, 3 direction |

**Table 3-2: AFL-08MH LCD Specifications**

### 3.1.4 AFL-10M LCD Specifications

**Table 3-3** lists the LCD specifications of the AFL-10M.

| Model | AFL-10M |
|---|---|
| Size | 10.4” |
| MFR/Model | TOSHIBA/LTA104D182F |
| Resolution | SVGA (800 x 600) |
| Active Area (mm) | 211.1 x 158.4 |
| Pixel Pitch (mm) | 0.264 |
| Number of Colors | 262 K |
| View Angle (H/V) | 120/100 |
| Brightness (cd/m2) | 400 |
| Contrast Ratio | 500:1 |
| Interface | 1ch LVDS |
| Supply Voltage (V) | 3.3 |
| Backlight | 2 CCFL |
| Lamp Life (hrs) | 50000 |
| Operating Temperature | -10℃ ~ +70℃ |
| Storage Temperature | -20℃ ~ +80℃ |
| Storage Humidity | 10% ~ 90%RH |

**Table 3-3: AFL-10M LCD Specifications**

### 3.1.5 AFL-12M LCD Specifications

**Table 3-4** lists the LCD specifications of the AFL-12M.

| Model | AFL-12M |
|---|---|
| Size | 12.1” |
| MFR/Model | CMO/G121X1-L01 |
| Resolution | XGA (1024 x 768) |
| Active Area (mm) | 245.76 x 184.32 |
| Pixel Pitch (mm) | 0.240 |
| Number of Colors | 262K |
| View Angle (H/V) | 160 / 160 |
| Brightness (cd/m2) | 450 |
| Contrast Ratio | 700:1 |
| Response Time (ms) (at 25C) | 6 (Tr)/17 (Tf) |
| Power Consumption (W) | 4 |
| Interface | LVDS |
| Supply Voltage (V) | 3.3 |
| Backlight | 2 CCFL |
| Lamp Life (hrs) | 50000 |
| Operating Temperature | -30℃ ~ +70℃ |
| Operating Humidity | 8% ~ 95%RH |
| Storage Temperature | -40℃ ~ +80℃ |
| Storage Humidity | 5% ~ 95%RH |
| Shock (Non-Operating) | 220G, 2ms, Half-sine wave |
| Vibration (Non-Operating) | 1.5G, 10~300Hz,<br>Sine wave 10mins/axis, 3 direction |

**Table 3-4: AFL-12M LCD Specifications**

### 3.1.6 AFL-15M LCD Specifications

**Table 3-5** lists the LCD specifications of the AFL-15M.

| Model | AFL-15M |
|---|---|
| Size | 15" |
| MFR/Model | AUO/G150XG01 |
| Resolution | XGA (1024 x 768) |
| Active Area (mm) | 304.1 x 228.1 |
| Pixel Pitch (mm) | 0.297 |
| Number of Colors | 262K |
| View Angle (H/V) | 120/100 |
| Brightness (cd/m2) | 350 |
| Contrast Ratio | 400:1 |
| Response Time (ms) (at 25C) | 16 (Tr+Tf) |
| Power Consumption (W) | 11.5 |
| Interface | LVDS |
| Supply Voltage (V) | 3.3 |
| Backlight | 2 CCFL |
| Lamp Life (hrs) | 50000 |
| Operating Temperature | 0℃~+50℃ |
| Operating Humidity | 20%~85%RH |
| Storage Temperature | -20℃~+60℃ |
| Storage Humidity | 5%~95%RH |
| Shock (Non-Operating) | 50G, 20ms, Half-sine wave |
| Vibration (Non-Operating) | 1.5G, 10~200Hz,<br>Sine wave 30mins/axis, 3 direction |

**Table 3-5: AFL-15M LCD Specifications**

### 3.1.7 AFL-17M LCD Specifications

**Table 3-6** lists the LCD specifications of the AFL-17M.

| Model | AFL-17M |
|---|---|
| Size | 17” |
| MFR/Model | AUO/M170EG01 |
| Resolution | SXGA (1280 x 1024) |
| Active Area (mm) | 337.9 x 270.3 |
| Pixel Pitch (mm) | 0.264 |
| Number of Colors | 16.7M |
| View Angle (H/V) | 160/160 |
| Brightness (cd/m2) | 300 |
| Contrast Ratio | 800:1 |
| Response Time (ms) (at 25C) | 5 (Tr+Tf) |
| Power Consumption (W) | 25.8 |
| Interface | 2ch LVDS |
| Supply Voltage (V) | 5 |
| Backlight | 4 CCFL |
| Lamp Life (hrs) | 50,000 |
| Operating Temperature | 0℃~+50℃ |
| Operating Humidity | 5%~90%RH |
| Storage Temperature | -20℃~+60℃ |
| Storage Humidity | 5%~90%RH |
| Shock (Non-Operating) | 50G, 20ms, Half-sine wave |
| Vibration (Non-Operating) | 1.5G, 10~200~10Hz,<br>Sine wave 30mins/axis, 3 direction |

**Table 3-6: AFL-17M LCD Specifications**

### 3.1.8 AFL-19M LCD Specifications

**Table 3-7** lists the LCD specifications of the AFL-19M.

| Model | AFL-19M |
|---|---|
| Size | 19” |
| MFR/Model | AUO/M190EG02 |
| Resolution | SXGA (1280 x 1024) |
| Active Area (mm) | 376.32 x 301.06 |
| Pixel Pitch (mm) | 0.294 |
| Number of Colors | 16.7M |
| View Angle (H/V) | 160 / 160 |
| Brightness (cd/m2) | 300 |
| Contrast Ratio | 800:1 |
| Response Time (ms) (at 25C) | 5 (Tr+Tf) |
| Power Consumption (W) | 24.71 |
| Interface | 2ch LVDS |
| Supply Voltage (V) | 5 |
| Backlight | 4 CCFL |
| Lamp Life (hrs) | 50,000 |
| Operating Temperature | 0℃~+50℃ |
| Operating Humidity | 5%~90%RH |
| Storage Temperature | -20℃~+60℃ |
| Storage Humidity | 5%~90%RH |
| Shock (Non-Operating) | 50G, 20ms, Half-sine wave |
| Vibration (Non-Operating) | 1.5G, 10~200~10Hz,<br>Sine wave 30mins/axis, 3 direction |

**Table 3-7: AFL-19M LCD Specifications**

## 3.2 Optional Touch Panels

IEI offers optional touch panels for the AFL series industrial monitors with the following features:

- Small border customized design
- All size touch panel design
- Customized activation force and palm rejection
- Customized optical characteristics
- High reliability and durability in the field

### 3.2.1 Touch Panel Models

**Table 3-8** lists the AFL series industrial monitors and their associated touch panels.

| Model | Touch Panel |
|---|---|
| AFL-19M | PanJit 1190503A |
| AFL-17M | PanJit 1171505A |
| AFL-15M | PanJit 1150508B |
| AFL-12M | PanJit 1121505B |
| AFL-10M | PanJit 1104502A |
| AFL-08MH | PanJit 1084403B |
| AFL-07M | PanJit 1070404C |

**Table 3-8: Touch Panel Models**

### 3.2.2 Touch Panel Dimensions

**Table 3-9** shows the touch panel dimensions in millimeters.

| Model: | Dimension | Width | Length | Thick |
|---|---|---|---|---|
| PanJit 1190503A | Dimensional Outline: | 330 | 404.6 | 2.8 |
| | Viewing Area: | 306.05 | 381.3 | - |
| | Active Area: | 301.05 | 376.3 | - |
| | Key Area: | 300.05 | 375.3 | - |
| PanJit 1171505A | Dimensional Outline: | 365 | 295.08 | 2.9 |
| | Viewing Area: | 342.05 | 275.45 | - |
| | Active Area: | 342.05 | 275.45 | - |
| | Key Area: | 338.0 | 271.4 | - |
| PanJit 1150508B | Dimensional Outline: | 257.5 | 333.6 | 2.9 |
| | Viewing Area: | 232.1 | 308.2 | - |
| | Active Area: | 228.1 | 304.1 | - |
| PanJit 1121505B | Dimensional Outline: | 204 | 268 | 2.1 |
| | Viewing Area: | 188 | 250 | - |
| | Active Area: | 185 | 246 | - |
| PanJit 1104502A | Dimensional Outline: | 238.8 | 188.7 | 2.6 |
| | Viewing Area: | 219.8 | 166.8 | - |
| | Active Area: | 212.1 | 159.3 | - |
| PanJit 1084403B | Dimensional Outline: | 145.53 | 188.04 | 2.1 |
| | Viewing Area: | 130.75 | 173.38 | - |
| | Active Area: | 127.78 | 170.38 | - |
| PanJit 1070404C | Dimensional Outline: | 165.00 | 104.00 | 1.4 |
| | Viewing Area: | 154.90 | 93.94 | - |
| | Active Area: | 152.4 | 91.44 | - |

**Table 3-9: Touch Panel Dimensions (mm)**

### 3.2.3 Touch Panel Specifications

**Table 3-10** lists the touch panel specifications.

| | |
|---|---|
| **Type** | **Analog Resistive Type Touch Panel** |
| **Input Method** | **Finger, Stylus or gloved hand** |
| **Wire Type** | **5-wire/4-wire** |
| **Maximum Voltage and Currant** | **DC7V** |
| **Position Accuracy** | **Less than 1.5%** |
| **Isolation** | **≥20M ohm** |
| **Resolution** | **4096 x 4096 dpi based on controller resolution** |
| **Activation Force** | **Typical: less than 100g**<br>**Optional: custom activation force and palm rejection** |
| **Controller Interface** | **RS-232 or USB 1.1** |
| **Light Transmission** | **Anti-glare type: 78% - 90%** |
| **Temperature (Typical)** | **Operating: -10°C to 60°C**<br>**Storage: -20°C to 70°C** |
| **Relative Humidity** | **Operating: 20% to 90%RH**<br>**Storage: 20% to 90%RH** |
| **Electrostatic Protection** | **Touch Panel: 30KV (Contact/Air)**<br>**Controller: 20KV (Contact/Air)** |
| **Surface Hardness** | **3H and above per LIS K5400** |
| **Life (Hitting)** | **More than 10 million for 5-wire touch panel** |
| **Life (Drawing)** | **More than 300 K alphabets for 5-wire touch panel** |
| **OS Compatibility** | **Windows: XP/XP Embedded**<br>**Windows 2000**<br>**Windows ME**<br>**Windows 98 SE**<br>**Windows CE.Net 4.2 (x86 and ARM)**<br>**WHQL certified**<br>**Linux: Fedora Core I/II, Mandrake 10.0/10.1,**<br>**RedHat 9.0** |

**Table 3-10: Touch Panel Specifications**

### 3.2.4 Touch Panel RS-232 Controller Specifications

**Table 3-11** lists the touch panel RS-232 controller specifications.

| | |
|---|---|
| **Circuit Board Dimension** | **20mm x 75mm (0.79inches x 2.95inches)----(5-Wire)** |
| **Power Requirements** | **D.C.+5V (100mA typical, 50mV peak to peak maximum ripple and noise)** |
| **Operating Temperature** | **0°C to 50°C** |
| **Storage Temperature** | **-40°C to 80°C** |
| **Relative Humidity** | **95% at 60°C** |
| **Interface** | **Bi-directional RS-232 serial communication** |
| **Protocol** | **No parity, 8 data bits, 1 stop bit, 9600 baud (N,8,1,9600)** |
| **Resolution** | **2048x2048** |
| **Report Rate** | **Max. 160 points/sec** |
| **Response Time** | **Max. 35 ms** |
| **Attached Cable** | **6' shielded cable with 9-pin D-sub connector** |
| **Regulatory Approvals** | **FCC-B, CE, Unaffected by EMI from other nearby CRTs and other display devices** |
| **EMI** | **Unaffected by environmental EMI** |
| **Panel Resistance** | **5 wire resistive model: 50 ~ 200 ohm** |

**Table 3-11: Touch Panel RS-232 Controller Specifications**

### 3.2.5 Touch Panel USB Controller Specifications

**Table 3-12** lists the touch panel USB controller specifications.

| | |
|---|---|
| **Circuit Board Dimension** | **20mm x 75mm (0.79inches x 2.95inches)----(5-Wire)** |
| **Power Requirements** | **D.C.+5V (100mA typical, 50mV peak to peak maximum ripple and noise)** |
| **Operating Temperature** | **0°C to 50°C** |
| **Storage Temperature** | **-40°C to 80°C** |
| **Relative Humidity** | **95% at 60°C** |
| **Interface** | **USB 1.1 Low Speed** |
| **Protocol** | **No parity, 8 data bits, 1 stop bit, 9600 baud (N,8,1,9600)** |
| **Resolution** | **2048 x 2048** |
| **Report Rate** | **Max. 160 points/sec** |
| **Response Time** | **Max. 35 ms** |
| **Attached Cable** | **6' shielded cable with USB-A connector for USB port** |
| **Regulatory Approvals** | **FCC-B, CE, Unaffected by EMI from other nearby CRTs and other display devices** |
| **EMI** | **Unaffected by environmental EMI** |
| **Panel Resistance** | **5 wire resistive model: 50 ~ 200 ohm** |

**Table 3-12: Touch Panel USB Controller Specifications**

## 3.3 Power Adapters

**Table 3-13** lists the AC/DC power adapter specifications.

| Model | AFL-07M, AFL-08MH, AFL-10M, AFL-12M | AFL-15M, AFL-17M, AFL-19M |
|---|---|---|
| Power | 36 Watt AC/DC Adapter | 60 Watt AC/DC Adapter |
| Output Voltage | 12V | 12V |
| Input Voltage Range | 90-264VAC | 90-264VAC |
| Input Frequency | 47-63 Hz | 47-63 Hz |
| Inrush Current | 220V@100A | 220V@100A |
| Hold-up Time | 5mS | 8mS |
| Leakage Current | 3.5mA max. (at 240Vac 60Hz) | 0.75mA max. (at 240Vac 60Hz) |
| Short Circuit Protection | Continuous | Continuous |
| Over-voltage Protection | Yes | Yes |
| MTBF | 60000hrs | 60000hrs |
| Efficiency | 80% | 80% |
| Operating Temperature | 0°C ~40°C | 0°C ~40°C |
| Storage Temperature | -20°C ~65°C | -20°C ~65°C |

**Table 3-13: Power Adapter Specifications**

Chapter

4

# AD Board

## 4.1 AV-9962 AD Board Overview

The AFL-07M, AFL-08MH, AFL-10M and AFL-12M industrial monitors are preinstalled with AV-9962 AD board to provide a wide variety of control interfaces. The following sections describe the AV-9962 AD board in detail.

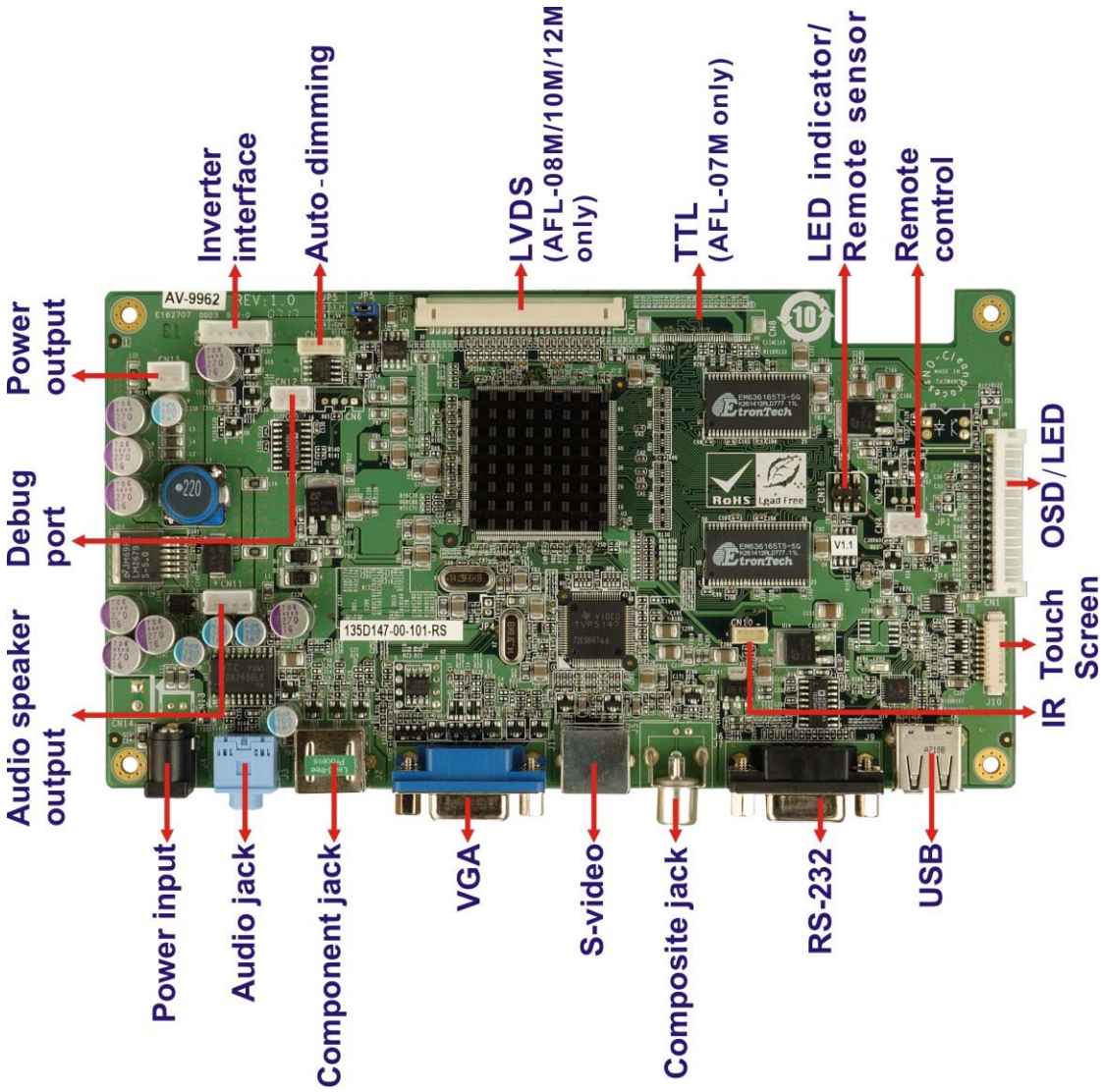



**Figure 4-1: AV-9962 AD Board Overview**

### 4.1.1 AV-9962 AD Board Connectors

The AV-9962 AD board has the following connectors on-board:

- 1 x Audio output connector
- 1 x Auto-dimming connector
- 1 x Debug port
- 1 x LED indicator and remote sensor connector
- 1 x Inverter interface connector
- 1 x IR sensor connector
- 1 x LVDS signal output connector (AFL-08MH/10M/12M only)
- 1 x OSD and LED connector
- 1 x Power output connector
- 1 x Remote control connector
- 1 x TTL signal output connector (AFL-07M only)
- 1 x Touch panel connector

The AV-9962 AD board has the following connectors on the board rear panel:

- 1 x Audio jack
- 1 x Component video connector
- 1 x Composite video connector
- 1 x Power input connector
- 1 x RS-232 connector
- 1 x S-Video connector
- 1 x USB connector
- 1 x VGA connector

The locations of the peripheral interface connectors for the AV-9962 AD board are shown in **Section 4.1.2**. A complete list of all the peripheral interface connectors can be seen in **Section 4.1.3**.

### 4.1.2 AV-9962 AD Board Layout

**Figure 4-2** shows the on-board peripheral connectors and on-board jumpers.

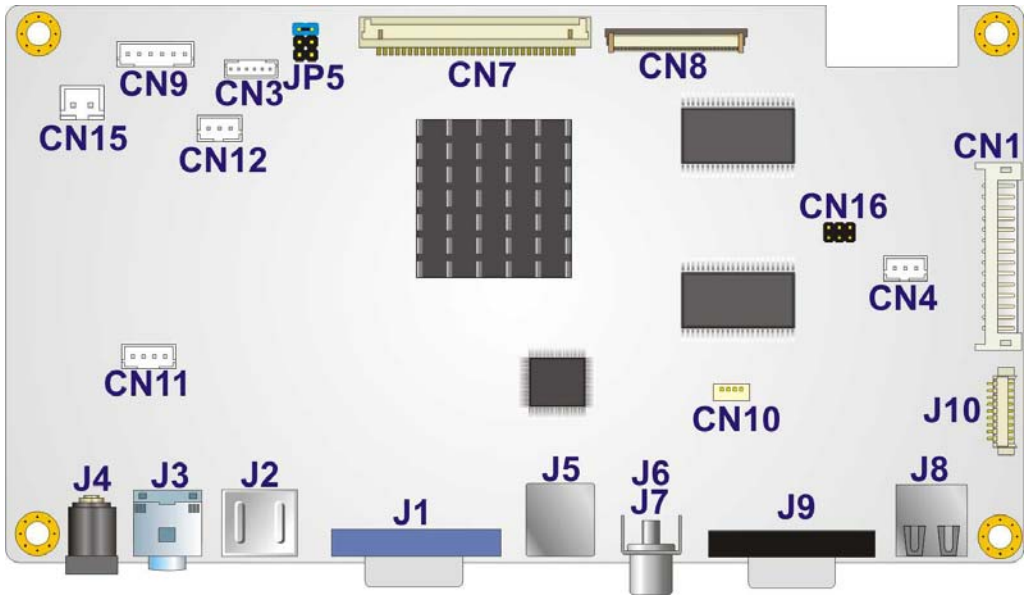



**Figure 4-2: AV-9962 Connector and Jumper Locations**

### 4.1.3 AV-9962 Peripheral Interface Connectors

**Table 4-1** shows a list of the peripheral interface connectors on the AV-9962 AD board. Detailed descriptions of these connectors can be found in **Section 4.2**.

| Connector | Type | Label |
|---|---|---|
| Audio output connector | 4-pin wafer connector | CN11 |
| Auto-dimming connector | 6-pin wafer connector | CN3 |
| Debug port | 3-pin wafer connector | CN12 |
| LED indicator and remote sensor connector | 6-pin header | CN16 |
| Inverter interface connector | 6-pin wafer connector | CN9 |
| IR sensor connector | 4-pin wafer connector | CN10 |
| LVDS signal output connector | 30-pin connector | CN7 |

| | | |
|---|---|---|
| (AFL-08MH/10M/12M only) | | |
| OSD and LED connector | 16-pin wafer connector | CN1 |
| Power output connector | 2-pin wafer connector | CN15 |
| Remote control connector | 3-pin wafer connector | CN4 |
| TTL signal output connector (AFL-07M only) | 40-pin connector | CN8 |
| Touch panel connector | 9-pin wafer connector | J10 |

**Table 4-1: AV-9962 Peripheral Interface Connectors**

### 4.1.4 AV-9962 Rear Panel Connectors

**Table 4-2** lists the rear panel connectors on the AV-9962 AD board. Detailed descriptions of these connectors can be found in **Section 4.4**.

| Connector | Type | Label |
|---|---|---|
| Audio jack | Audio jack | J3 |
| Component video signal input jack | mini-DIN 7 component connector | J2 |
| Composite signal input jack | Composite video connector | J6, J7 |
| Power input connector | DC 12V Jack | J4 |
| RS-232 connector | DB-9 female connector | J9 |
| S-Video signal input jack | mini-DIN 4 S-Video connector | J5 |
| USB connector | USB port | J8 |
| VGA connector | D-sub 15-pin female connector | J1 |

**Table 4-2: AV-9962 Rear Panel Connectors**

### 4.1.5 AV-9962 On-board Jumpers

**Table 4-3** lists the on-board jumpers. A detailed description of these jumpers can be found in **Section 4.3.**

| Jumper | Type | Label |
|---|---|---|
| LCD Panel Voltage Select | 6-pin header | JP5 |
| Touch screen select | 2-pin header | JP6 |

**Table 4-3: AV-9962 On-board Jumpers**

## 4.2 AV-9962 Internal Peripheral Connectors

Internal peripheral connectors on the AV-9962 AD board are only accessible when the board is outside of the monitor. This section has complete descriptions of all the internal, peripheral connectors on the AV-9962 AD board.

### 4.2.1 Audio Output Connector

CN Label: CN11

CN Type: 4-pin wafer connector

CN Pinouts: See **Table 4-4**

CN Location: See **Figure 4-3**

The audio output connector connects to two preinstalled speakers.

| PIN | DESCRIPTION |
|---|---|
| 1 | Audio_Output_Left |
| 2 | AGND |
| 3 | AGND |
| 4 | Audio_Output_Right |

**Table 4-4: Audio Output Connector Pinouts**

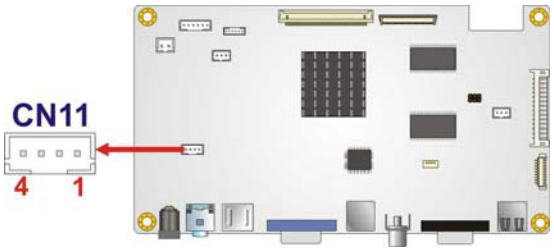



**Figure 4-3: Audio Output Connector Location**

### 4.2.2 Auto-Dimming Connector

CN Label: CN3

CN Type: 6-pin wafer connector

CN Pinouts: See **Table 4-5**

CN Location: See **Figure 4-4**

The auto-dimming connector connects to an external auto-dimming sensor.

| PIN | DESCRIPTION |
|---|---|
| 1 | +3.3V |
| 2 | NC |
| 3 | GND |
| 4 | SCL |
| 5 | NC |
| 6 | SDA |

**Table 4-5: Auto-dimming Connector Pinouts**

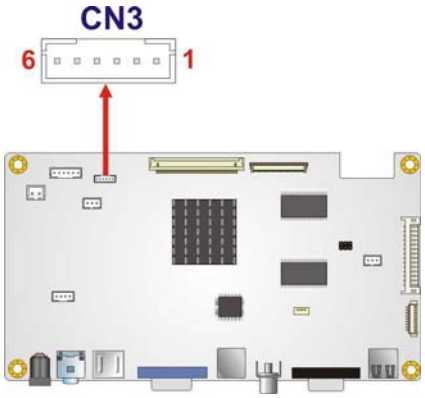



**Figure 4-4: Auto-dimming Connector Location**

### 4.2.3 Debug Port Connector

CN Label: CN12

CN Type: 3-pin wafer connector

CN Pinouts: See **Table 4-6**

CN Location: See **Figure 4-5**

Use the debug port connector to update the AD board BIOS.

| PIN | DESCRIPTION |
|---|---|
| 1 | RX |
| 2 | TX |
| 3 | GND |

**Table 4-6: Debug Port Connector Pinouts**

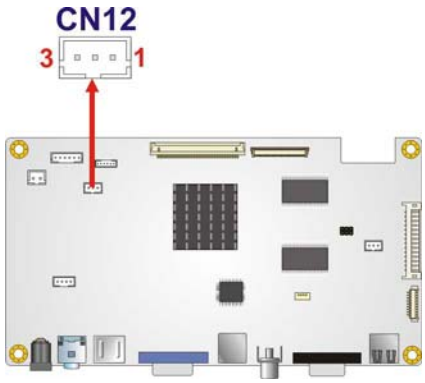



**Figure 4-5: Debug Port Connector Location**

### 4.2.4 OSD and LED Connector

CN Label: CN1

CN Type: 16-pin wafer connector

CN Pinouts: See **Table 4-7**

CN Location: See **Figure 4-6**

The OSD and LED connector connects to an external OSD controller.

| PIN | DESCRIPTION |
|---|---|
| 1 | MENU/ENTER |
| 2 | DOWN |
| 3 | LEFT |
| 4 | UP |
| 5 | RIGHT |
| 6 | LED_SENSOR |
| 7 | SWAP |
| 8 | PIP |
| 9 | SOURCE |
| 10 | LCD ON/OFF |
| 11 | VIN1 |
| 12 | VIN2 |
| 13 | AUTO/EXIT |

| | |
|---|---|
| 14 | LED_RED |
| 15 | LED_GREEN |
| 16 | GND |

**Table 4-7: OSD and LED Connector Pinouts**

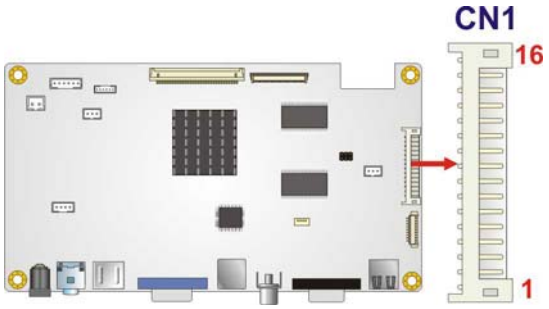



**Figure 4-6: OSD and LED Connector Location**

### 4.2.5 LED Indicator and Remote Sensor Connector

CN Label: CN16

CN Type: 6-pin header

CN Pinouts: See **Table 4-8**

CN Location: See **Figure 4-7**

This connector connects to the LED indicator and remote sensor.

| PIN | DESCRIPTION |
|---|---|
| 1 | IR VCC |
| 2 | RED |
| 3 | IR OUT |
| 4 | GREEN |
| 5 | GND |
| 6 | GND |

**Table 4-8: LED and Remote Sensor Connector Pinouts**

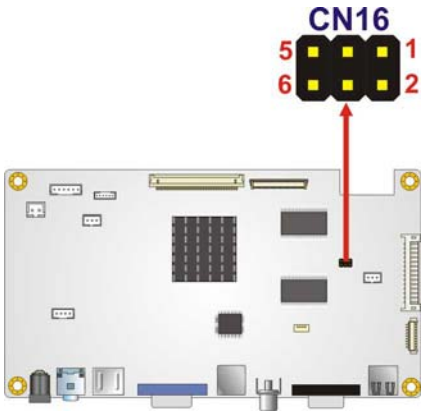



**Figure 4-7: LED and Remote Sensor Connector Location**

### 4.2.6 Backlight Inverter Interface Connector

CN Label: CN9

CN Type: 6-pin wafer connector

CN Pinouts: See **Table 4-9**

CN Location: See **Figure 4-8**

The Inverter connector connects to the LCD backlight. Using the BKLT_EN signal to control the inverter status (ON/OFF) and the BKLT_ADJ signal to adjust brightness of inverter by OSD brightness function. The OSD brightness function can control a PWM input and variable DC voltage to minimize flickering (due to the interference between panel timing and inverter’s AC timing), and adjust LCD back light brightness.

| PIN | DESCRIPTION |
|---|---|
| 1 | +12V |
| 2 | +12V |
| 3 | BKLT_EN |
| 4 | BKLT_ADJ |
| 5 | GND |
| 6 | GND |

**Table 4-9: Backlight Inverter Connector Pinouts**

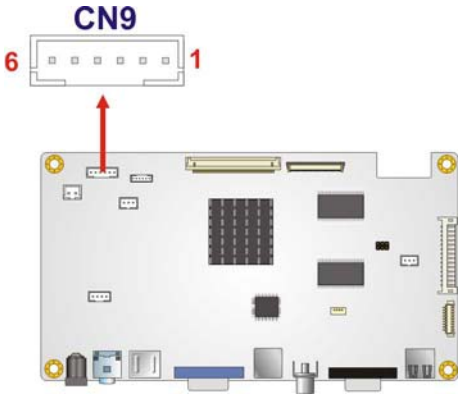



**Figure 4-8: Backlight Inverter Connector Location**

### 4.2.7 IR Sensor Connector

CN Label: CN10

CN Type: 4-pin wafer connector

CN Pinouts: See **Table 4-10**

CN Location: See **Figure 4-9**

The IR sensor connector connects to the body IR sensor.

| PIN | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | 38KHz |
| 3 | IRDET |
| 4 | GND |

**Table 4-10: IR Sensor Connector Pinouts**

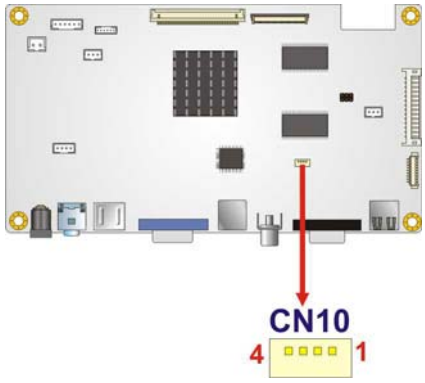



**Figure 4-9: IR Sensor Connector Location**

### 4.2.8 LVDS Signal Output Connector (AFL-08MH/10M/12M only)

CN Label: CN7

CN Type: 30-pin connector

CN Pinouts: See **Table 4-11**

CN Location: See **Figure 4-10**

Use the LVDS signal output connector to connect the LCD panel to a system.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | TXO3+ | 4 | TXO3- |
| 5 | TXOC+ | 6 | TXOC- |
| 7 | TXO2+ | 8 | TXO2- |
| 9 | TXO1+ | 10 | TXO1- |
| 11 | TXO0+ | 12 | TXO0- |
| 13 | GND | 14 | GND |
| 15 | TXE3+ | 16 | TXE3- |
| 17 | TXEC+ | 18 | TXEC- |
| 19 | TXE2+ | 20 | TXE2- |
| 21 | TXE1+ | 22 | TXE1- |
| 23 | TXE0+ | 24 | TXE0- |
| 25 | GND | 26 | GND |

| | | | |
|---|---|---|---|
| 27 | VDD | 28 | VDD |
| 29 | VDD | 30 | VDD |

**Table 4-11: LVDS Signal Output Connector Pinouts**

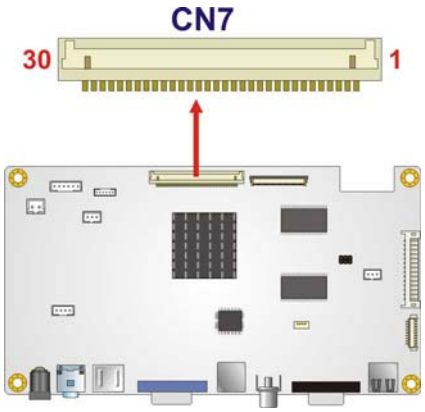



**Figure 4-10: LVDS Signal Output Connector Location**

**NOTE:**

*The supply voltage (3.3V (Default), 5V or 12V) can be selected via JP5.*

### 4.2.9 Power Output Connector

CN Label: CN15

CN Type: 2-pin wafer connector

CN Pinouts: See **Table 4-12**

CN Location: See **Figure 4-11**

The AV-9962 supports one 5V power output connector.

| PIN | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | GND |

**Table 4-12: Power Output Connector Pinouts (CN15)**

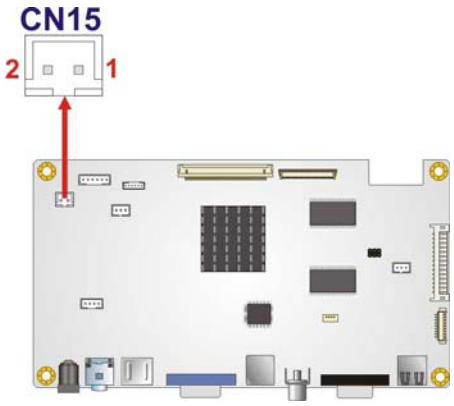



**Figure 4-11: Power Output Connector Locations**

### 4.2.10 Remote Control Connector

CN Label: CN4

CN Type: 3-pin wafer connector

CN Pinouts: See **Table 4-13**

CN Location: See **Figure 4-12**

The remote control connector supports remote control function.

| PIN | DESCRIPTION |
|---|---|
| 1 | GND |
| 2 | VCC |
| 3 | Remote Out |

**Table 4-13: Remote Control Connector Pinouts**

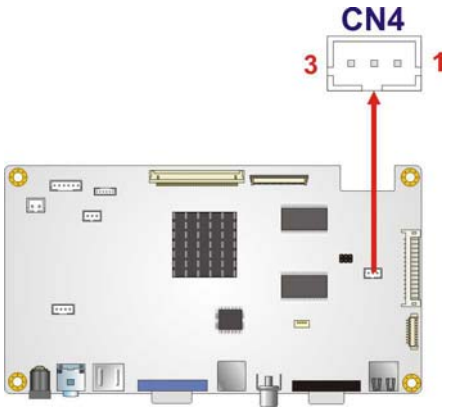



**Figure 4-12: Remote Control Connector Location**

### 4.2.11 TTL Signal Output Connector (AFL-07M Model Only)

CN Label: CN8

CN Type: 40-pin connector

CN Pinouts: See **Table 4-14**

CN Location: See **Figure 4-13**

Use the TTL signal output connector to connect the TTL LCD panel to a system.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | TTLDCLK | 4 | GND |
| 5 | GND | 6 | TTLR0 |
| 7 | TTLR1 | 8 | TTLR2 |
| 9 | GND | 10 | TTLR3 |
| 11 | TTLR4 | 12 | TTLR5 |
| 13 | GND | 14 | TTLG0 |
| 15 | TTLG1 | 16 | TTLG2 |
| 17 | GND | 18 | TTLG3 |
| 19 | TTLG4 | 20 | TTLG5 |
| 21 | GND | 22 | TTLB0 |

| | | | |
|---|---|---|---|
| 23 | TTLB1 | 24 | TTLB2 |
| 25 | GND | 26 | TTLB3 |
| 27 | TTLB4 | 28 | TTLB5 |
| 29 | GND | 30 | GND |
| 31 | GND | 32 | TTLDEN |
| 33 | TTLHS | 34 | VDD |
| 35 | VDD | 36 | VDD |
| 37 | VDD | 38 | TTLVS |
| 39 | GND | 40 | GND |

**Table 4-14: TTL Signal Output Connector Pinouts**

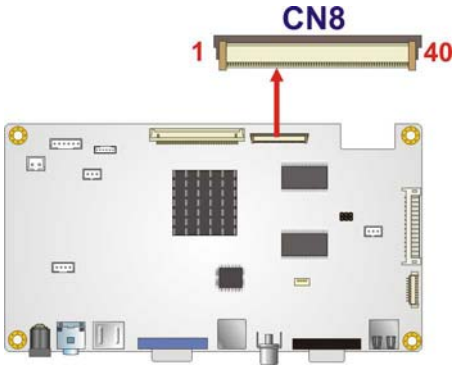



**Figure 4-13: TTL Signal Output Connector Location**

### 4.2.12 Touch Panel Connector

CN Label: J10

CN Type: 9-pin wafer connector

CN Pinouts: See **Table 4-15**

CN Location: See **Figure 4-14**

Use the touch panel connector to connect the optional touch panel to the AFL series industrial monitor.

| PIN | DESCRIPTION |
|---|---|
| 1 | X+ |
| 2 | X- |
| 3 | Y+ |
| 4 | SENSE |
| 5 | X+ |
| 6 | X- |
| 7 | Y+ |
| 8 | Y- |
| 9 | GND |

**Table 4-15: Touch Panel Connector Pinouts**

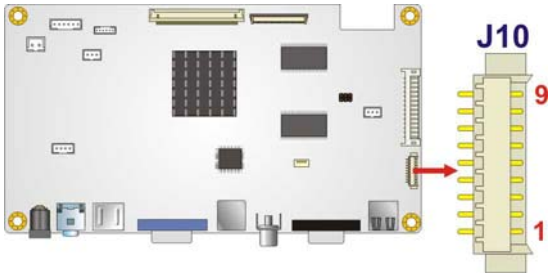



**Figure 4-14: Touch Panel Connector Location**

## 4.3 AV-9962 On-board Jumpers

**NOTE:**

*A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.*

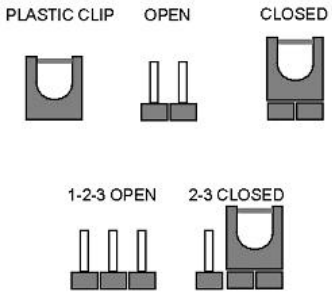



**Figure 4-15: Jumpers**

The AV-9962 has two on-board jumpers (**Table 4-3**).

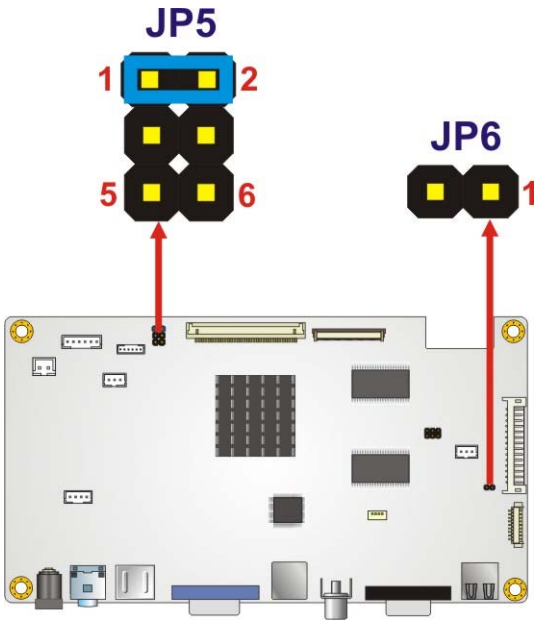



**Figure 4-16: AV-9962 Jumper Locations**

### 4.3.1 LCD Panel Voltage Select Jumper

| | |
|---|---|
| Jumper Label: | JP5 |
| Jumper Type: | 6-pin header |
| Jumper Location: | See **Figure 4-16** |
| Jumper Settings: | See **Table 4-16** |

The JP5 jumper sets the voltage to the LCD panel.

| JP5 | Description |
|---|---|
| 1-2 | Panel Voltage select 3.3V (Default) |
| 3-4 | Panel Voltage select 5V |
| 5-6 | Panel Voltage select 12V |

**Table 4-16: LCD Panel Voltage Select Jumper Settings**

### 4.3.2 Touch Screen Select Jumper

| | |
|---|---|
| Jumper Label: | JP6 |
| Jumper Type: | 2-pin header |
| Jumper Location: | See **Figure 4-16** |
| Jumper Settings: | See **Table 4-17** |

The JP4 jumper sets the touch screen type.

| JP6 | Description |
|---|---|
| Short | 4-wire/8-wire touch screen (Default) |
| Open | 5-wire touch screen |

**Table 4-17: LCD Panel Power Input Jumper Settings**

## 4.4 AV-9962 External (Rear Panel) Connectors

**Figure 4-17** shows the AV-9962 external (rear panel) connectors. The peripheral connectors on the back panel of the monitor can connect to external devices. The peripheral connectors on the rear panel are:

- 1 x Audio jack
- 1 x Component video connector
- 1 x Composite video connector
- 1 x Power input connector
- 1 x RS-232 connector
- 1 x S-Video connector
- 1 x USB connector
- 1 x VGA connector

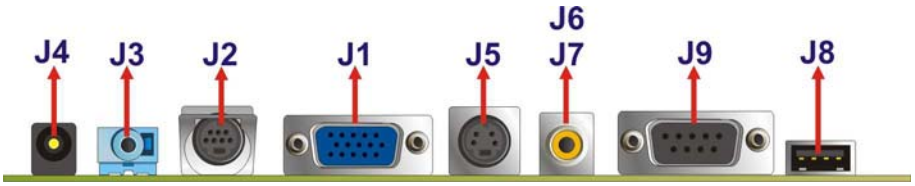



**Figure 4-17: AV-9962 External (Rear Panel) Connectors**

### 4.4.1 Audio Jack

CN Label: J3

CN Type: Audio jack

CN Pinouts: See **Table 4-18**

CN Location: See **Figure 4-17**

Use the audio jack to connect audio input to the monitor.

| PIN | DESCRIPTION |
|---|---|
| 1 | AGND |
| 2 | Audio_Iutput_Left |
| 3 | AGND |

| | |
|---|---|
| 4 | AGND |
| 5 | Audio_Iutput_Right |

**Table 4-18: Audio Jack Pinouts**

### 4.4.2 Component Video Connector

CN Label: J2

CN Type: mini-DIN 7 component video connector

CN Pinouts: See **Table 4-19**

CN Location: See **Figure 4-17** and **Figure 4-18**

Use the mini-DIN 7 component video connector to connect to the system graphics interface.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | VGND | 5 | VGND |
| 2 | Pb | 6 | Pr |
| 3 | VGND | 7 | VGND |
| 4 | Y | | |

**Table 4-19: Component Video Connector Pinouts**

**Figure 4-18: Component Video Connector Pinout Locations**

### 4.4.3 Composite Video Connector

CN Label: J6, J7

CN Type: Composite video connector

CN Pinouts: See **Table 4-20** and **Table 4-21**

CN Location: See **Figure 4-17**

Use the composite video connector to connect to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | VGND |
| 2 | CVBS-IN |

**Table 4-20: Composite Signal Input BNC Connector (J7) Pinouts**

| PIN | DESCRIPTION |
|---|---|
| 1 | CVBS-IN |
| 2 | VGND |
| 3 | VGND |
| 4 | VGND |

**Table 4-21: Composite Signal Input Connector (J6) Pinouts**

### 4.4.4 DC 12V Connector

CN Label: J4

CN Type: DC 12V Jack

CN Pinouts: See **Table 4-22**

CN Location: See **Figure 4-17**

Use the DC 12V connector to power the monitor.

| PIN | DESCRIPTION |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | +12V |

**Table 4-22: DC 12V Connector Pinouts**

### 4.4.5 RS-232 Touch Panel Connector

CN Label: J9

CN Type: DB-9 female connector

CN Pinouts: See **Table 4-23**

CN Location: See **Figure 4-17**

Use the rear panel standard RS-232 DB-9 female touch panel connector to connect the monitor to the system graphics interface.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | NRLSD | 7 | NRTS |
| 2 | NRX | 8 | NCTS |
| 3 | NTX | 9 | NRI |
| 4 | NDTR | 10 | GND |
| 5 | GND | 11 | GND |
| 6 | NDSR | | |

**Table 4-23: RS-232 Touch Panel Connector Pinouts**

### 4.4.6 S-Video Connector

CN Label: J5

CN Type: mini-DIN 4 S-Video connector

CN Pinouts: See **Table 4-24**

CN Location: See **Figure 4-17** and **Figure 4-19**

Use the mini-DIN 4 S-Video connector to connect to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | VGND |
| 2 | VGND |
| 3 | Y-IN |
| 4 | C-IN |

**Table 4-24: S-Video Connector Pinouts**

**Figure 4-19: S-Video Connector Pinout Locations**

### 4.4.7 USB Touch Panel Connector

CN Label: J8

CN Type: USB port

CN Pinouts: See **Table 4-25**

CN Location: See **Figure 4-17** and **Figure 4-20**

Use the rear panel standard USB touch panel connector to connect the monitor to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | VSB_VCC |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |

**Table 4-25: USB Touch Panel Connector Pinouts**

**Figure 4-20: USB Touch Panel Connector**

### 4.4.8 VGA Connector

CN Label: J1

CN Type: D-sub 15 female connector

CN Pinouts: See **Table 4-26**

CN Location: See **Figure 4-17** and **Figure 4-21**

Use the standard D-sub 15-pin VGA connector to connect the monitor to a system.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | Red | 9 | No Connect |
| 2 | Green | 10 | Ground |
| 3 | Blue | 11 | No Connect |
| 4 | No Connect | 12 | DDC DAT |
| 5 | Ground | 13 | Horizontal Synchronization |
| 6 | Ground | 14 | Vertical Synchronization |
| 7 | Ground | 15 | DDC Clock |
| 8 | Ground | | |

**Table 4-26: VGA Connector Pinouts**

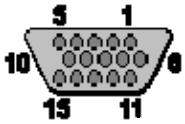



**Figure 4-21: VGA Connector Pinout Locations**

## 4.5 AV-6962 AD Board Overview

The AFL-15M, AFL-17M and AFL-19M industrial monitors are preinstalled with AV-6962 AD board to provide a wide variety of control interfaces. The following sections describe the AV-6962 AD board in detail.

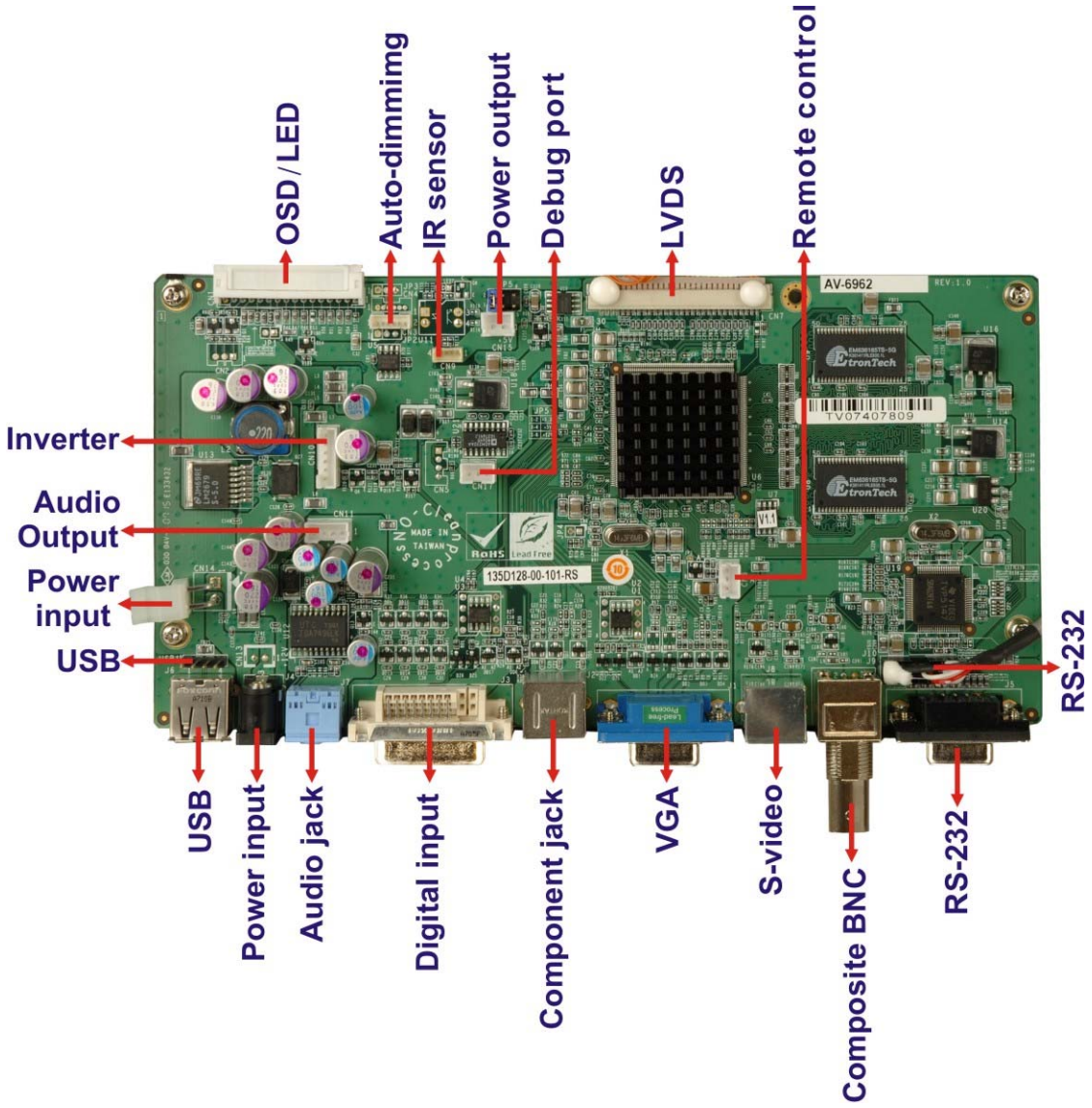



**Figure 4-22: AV-6962 AD Board Overview**

### 4.5.1 AV-6962 AD Board Connectors

The AV-6962 AD board has the following connectors on-board:

- 1 x Audio output connector
- 1 x Auto-dimming connector
- 1 x Debug port
- 1 x Inverter interface connector
- 1 x IR sensor connector
- 1 x LVDS signal output connector
- 1 x OSD and LED connector
- 1 x Power input connector
- 1 x Power output connector
- 1 x Remote control connector
- 1 x RS-232 Serial Port connector
- 1 x USB connector

The AV-6962 AD board has the following connectors on the board rear panel:

- 1 x Audio jack
- 1 x Component video connector
- 1 x Composite video connector
- 1 x Digital input connector
- 1 x Power input connector
- 1 x RS-232 connector
- 1 x S-Video connector
- 1 x USB connector
- 1 x VGA connector

The locations of the peripheral interface connectors for the AV-6962 AD board are shown in **Section 4.5.2**. A complete list of all the peripheral interface connectors can be seen in **Section 4.5.3**.

### 4.5.2 AV-6962 AD Board Layout

**Figure 4-23** shows the on-board peripheral connectors and on-board jumpers.

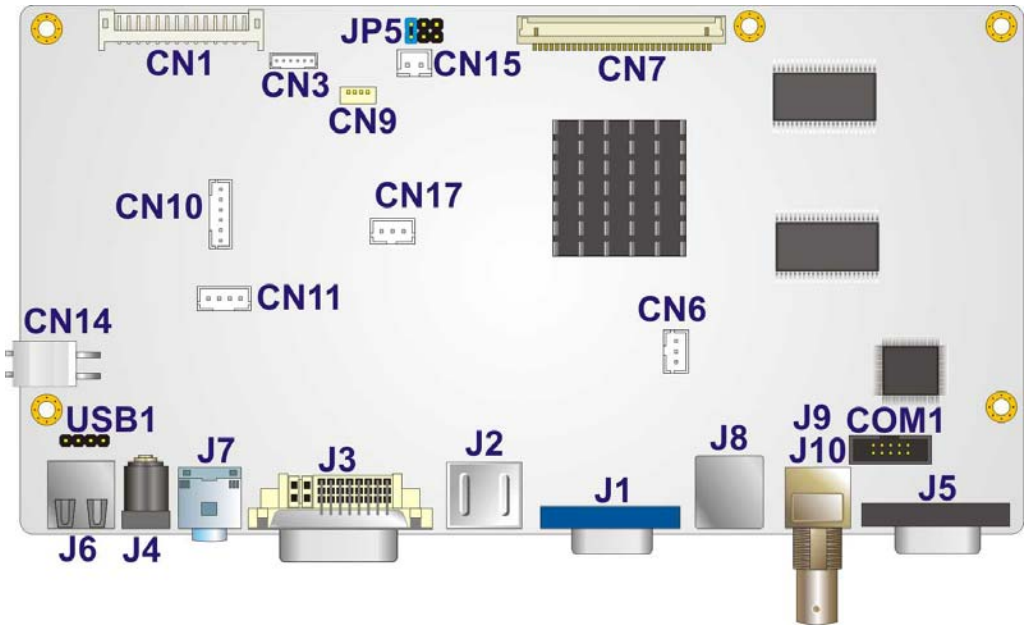



**Figure 4-23: AV-6962 Connector and Jumper Locations**

### 4.5.3 AV-6962 Peripheral Interface Connectors

**Table 4-27** shows a list of the peripheral interface connectors on the AV-6962 AD board. Detailed descriptions of these connectors can be found in **Section 4.6**.

| Connector | Type | Label |
|---|---|---|
| Audio output connector | 4-pin wafer connector | CN11 |
| Auto-dimming connector | 6-pin wafer connector | CN3 |
| Debug port | 3-pin wafer connector | CN17 |
| Inverter interface connector | 6-pin wafer connector | CN10 |
| IR sensor connector | 4-pin wafer connector | CN9 |
| LVDS signal output connector | 30-pin connector | CN7 |
| OSD and LED connector | 16-pin wafer connector | CN1 |
| Power input connector | 2-pin wafer connector | CN14 |
| Power output connector | 2-pin wafer connector | CN15 |
| Remote control connector | 3-pin wafer connector | CN6 |
| Serial port connector (RS-232) | 10-pin box header | COM1 |
| USB connector | 4-pin wafer connector | USB1 |

**Table 4-27: AV-6962 Peripheral Interface Connectors**

### 4.5.4 AV-6962 Rear Panel Connectors

**Table 4-28** lists the rear panel connectors on the AV-6962 AD board. Detailed descriptions of these connectors can be found in **Section 4.8**.

| Connector | Type | Label |
|---|---|---|
| Audio jack | Audio jack | J7 |
| Component video signal input jack | mini-DIN 7 component | J2 |

| | | |
|---|---|---|
| | connector | |
| Composite signal input BNC jack | Composite BNC connector | J9, J10 |
| Digital input connector | DVI-D connector | J3 |
| Power input connector | DC 12V Jack | J4 |
| RS-232 connector | DB-9 female connector | J5 |
| S-Video signal input jack | mini-DIN 4 S-Video connector | J8 |
| USB connector | USB port | J6 |
| VGA connector | D-sub 15-pin female connector | J1 |

**Table 4-28: AV-6962 Rear Panel Connectors**

### 4.5.5 AV-6962 On-board Jumpers

**Table 4-29** lists the on-board jumper. A detailed description of the jumper can be found in **Section 4.7.**

| Jumper | Type | Label |
|---|---|---|
| LCD Panel Voltage Select | 6-pin header | JP5 |

**Table 4-29: AV-6962 On-board Jumpers**

## 4.6 AV-6962 Internal Peripheral Connectors

Internal peripheral connectors on the AV-6962 AD board are only accessible when the board is outside of the monitor. This section has complete descriptions of all the internal, peripheral connectors on the AV-6962 AD board.

### 4.6.1 Audio Output Connector

CN Label: CN11

CN Type: 4-pin wafer connector

CN Pinouts: See **Table 4-30**

CN Location: See **Figure 4-24**

The audio output connector connects to two preinstalled speakers.

| PIN | DESCRIPTION |
|---|---|
| 1 | Audio_Output_Left |
| 2 | AGND |
| 3 | AGND |
| 4 | Audio_Output_Right |

**Table 4-30: Audio Output Connector Pinouts**

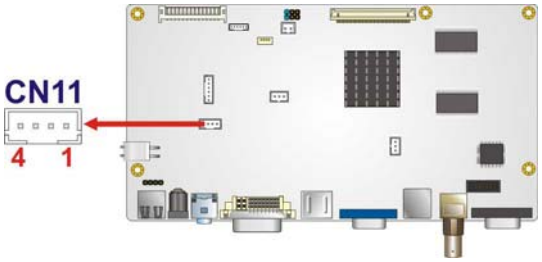



**Figure 4-24: Audio Output Connector Location**

### 4.6.2 Auto-Dimming Connector

CN Label: CN3

CN Type: 6-pin wafer connector

CN Pinouts: See **Table 4-31**

CN Location: See **Figure 4-25**

The auto-dimming connector connects to an external auto-dimming sensor.

| PIN | DESCRIPTION |
|---|---|
| 1 | +3.3V |
| 2 | NC |
| 3 | GND |
| 4 | SCL |
| 5 | NC |
| 6 | SDA |

**Table 4-31: Auto-dimming Connector Pinouts**

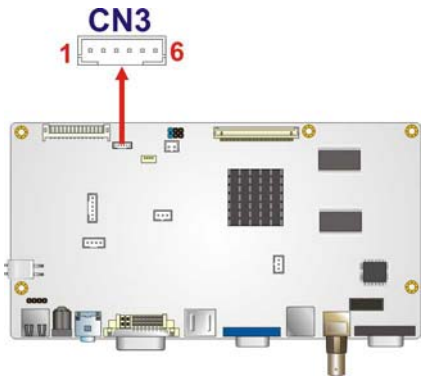



**Figure 4-25: Auto-dimming Connector Location**

### 4.6.3 Debug Port Connector

CN Label: CN17

CN Type: 3-pin wafer connector

CN Pinouts: See **Table 4-32**

CN Location: See **Figure 4-26**

Use the debug port connector to update the AD board BIOS.

| PIN | DESCRIPTION |
|---|---|
| 1 | RX |
| 2 | TX |
| 3 | GND |

**Table 4-32: Debug Port Connector Pinouts**

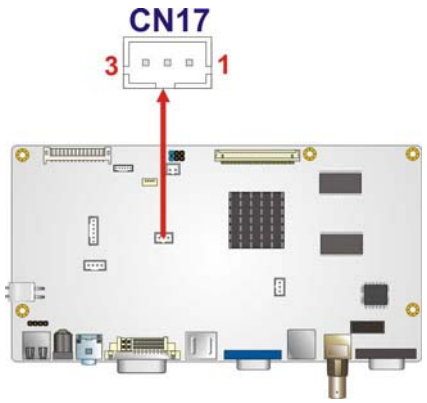



**Figure 4-26: Debug Port Connector Location**

### 4.6.4 Backlight Inverter Interface Connector

CN Label: CN10

CN Type: 6-pin wafer connector

CN Pinouts: See **Table 4-33**

CN Location: See **Figure 4-27**

The Inverter connector connects to the LCD backlight. Using the BKLT_EN signal to control the inverter status (ON/OFF) and the BKLT_ADJ signal to adjust brightness of inverter by OSD brightness function. The OSD brightness function can control a PWM input and variable DC voltage to minimize flickering (due to the interference between panel timing and inverter’s AC timing), and adjust LCD back light brightness.

| PIN | DESCRIPTION |
|---|---|
| 1 | +12V |
| 2 | +12V |
| 3 | BKLT_EN |
| 4 | BKLT_ADJ |
| 5 | GND |
| 6 | GND |

**Table 4-33: Backlight Inverter Connector Pinouts**

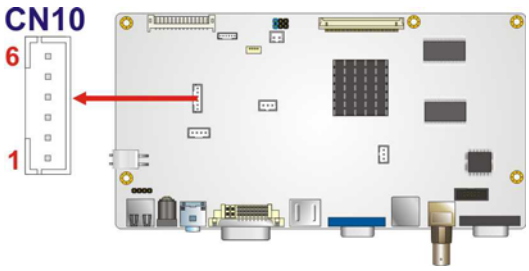



**Figure 4-27: Backlight Inverter Connector Location**

### 4.6.5 IR Sensor Connector

CN Label: CN9

CN Type: 4-pin wafer connector

CN Pinouts: See **Table 4-34**

CN Location: See **Figure 4-28**

The IR sensor connector connects to the body IR sensor.

| PIN | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | 38KHz |
| 3 | IRDET |
| 4 | GND |

**Table 4-34: IR Sensor Connector Pinouts**

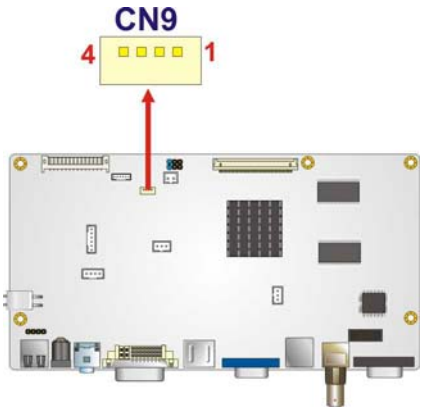



**Figure 4-28: IR Sensor Connector Location**

### 4.6.6 LVDS Signal Output Connector

CN Label: CN7

CN Type: 30-pin connector

CN Pinouts: See **Table 4-35**

CN Location: See **Figure 4-29**

Use the LVDS signal output connector to connect the LCD panel to a system.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | TXO3+ | 4 | TXO3- |
| 5 | TXOC+ | 6 | TXOC- |
| 7 | TXO2+ | 8 | TXO2- |
| 9 | TXO1+ | 10 | TXO1- |
| 11 | TXO0+ | 12 | TXO0- |
| 13 | GND | 14 | GND |
| 15 | TXE3+ | 16 | TXE3- |
| 17 | TXEC+ | 18 | TXEC- |
| 19 | TXE2+ | 20 | TXE2- |
| 21 | TXE1+ | 22 | TXE1- |

| | | | |
|---|---|---|---|
| 23 | TXE0+ | 24 | TXE0- |
| 25 | GND | 26 | GND |
| 27 | VDD | 28 | VDD |
| 29 | VDD | 30 | VDD |

**Table 4-35: LVDS Signal Output Connector Pinouts**

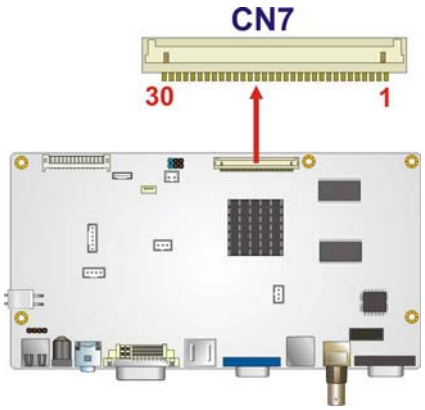



**Figure 4-29: LVDS Signal Output Connector Location**

**NOTE:**

*The supply voltage (3.3V (Default), 5V or 12V) can be selected via JP5.*

### 4.6.7 OSD and LED Connector

CN Label: CN1

CN Type: 16-pin wafer connector

CN Pinouts: See **Table 4-36**

CN Location: See **Figure 4-30**

The OSD and LED connector connects to an external OSD controller.

| PIN | DESCRIPTION |
|---|---|
| 1 | MENU/ENTER |

| | |
|---|---|
| 2 | DOWN |
| 3 | LEFT |
| 4 | UP |
| 5 | RIGHT |
| 6 | LED_SENSOR |
| 7 | SWAP |
| 8 | PIP |
| 9 | SOURCE |
| 10 | LCD ON/OFF |
| 11 | VIN1 |
| 12 | VIN2 |
| 13 | AUTO/EXIT |
| 14 | LED_RED |
| 15 | LED_GREEN |
| 16 | GND |

**Table 4-36: OSD and LED Connector Pinouts**

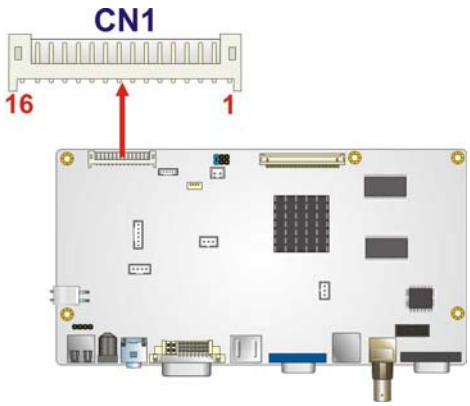



**Figure 4-30: OSD and LED Connector Location**

### 4.6.8 Power Input Connector

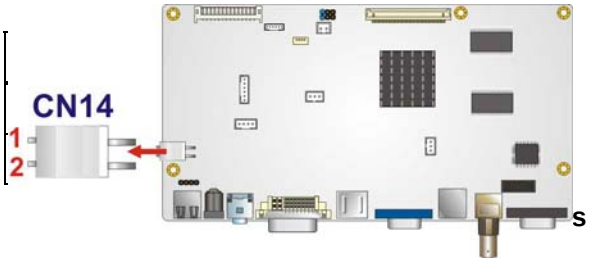
CN Label: CN14

CN Type: 2-pin wafer connector

CN Pinouts: See **Table 4-37**

CN Location: See **Figure 4-31**

The AV-6962 supports one 12V power input connector.




**s (CN15)**

**Figure 4-31: Power Output Connector Locations**

## 4.6.9 Power Output Connector

CN Label: CN15

CN Type: 2-pin wafer connector

CN Pinouts: See **Table 4-38**

CN Location: See **Figure 4-32**

The AV-6962 supports one +5V power output connector.

| PIN | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | GND |

**Table 4-38: Power Input Connector Pinouts (CN15)**

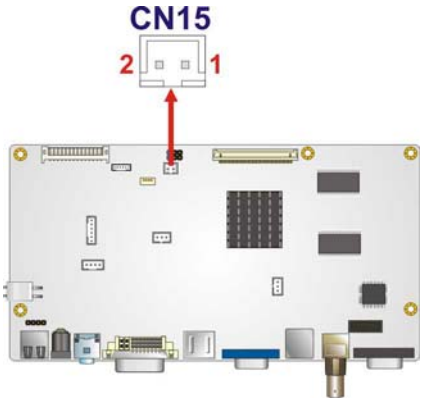



**Figure 4-32: Power Input Connector Locations**

### 4.6.10 Remote Control Connector

CN Label: CN6

CN Type: 3-pin box header

CN Pinouts: See **Table 4-39**

CN Location: See **Figure 4-33**

The remote control connector supports the remote control function.

| PIN | DESCRIPTION |
|---|---|
| 1 | GND |
| 2 | VCC |
| 3 | Remote Out |

**Table 4-39: Remote Control Connector Pinouts**

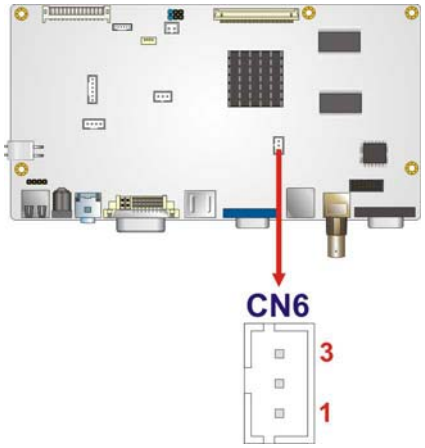



**Figure 4-33: Remote Control Connector Location**

### 4.6.11 RS-232 Serial Port Connector

CN Label: COM1

CN Type: 10-pin box header

CN Pinouts: See **Table 4-40**

CN Location: See **Figure 4-34**

The 10-pin serial port connector provides a second RS-232 serial communications channel. The COM1 serial port connector can be connected to external RS-232 serial port devices.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | NRLSD | 6 | NCTS |
| 2 | NDSR | 7 | NDTR |
| 3 | NRX | 8 | NRI |
| 4 | NRTS | 9 | GND |
| 5 | NTX | 10 | NC |

**Table 4-40: RS-232 Serial Port Connector Pinouts**

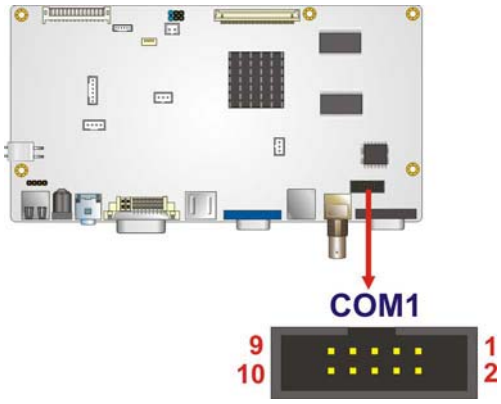



**Figure 4-34: RS-232 Serial Port Connector Location**

### 4.6.12 USB Connector

CN Label: USB1

CN Type: 4-pin header

CN Pinouts: See **Table 4-41**

CN Location: See **Figure 4-35**

The 1x4 USB pin connectors each provide connectivity to one USB port. Additional external USB ports are found on the rear panel. The USB port is used for USB touch panel.

| PIN | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |

**Table 4-41: USB Connector Pinouts**

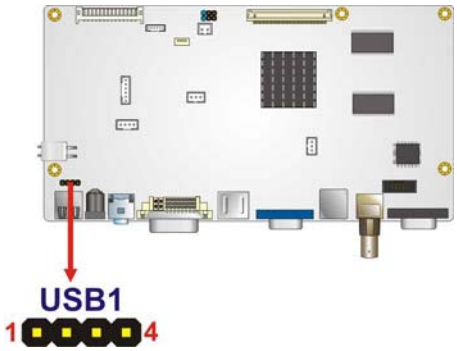



**Figure 4-35: USB Connector Location**

## 4.7 AV-6962 On-board Jumpers

**NOTE:**

*A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.*

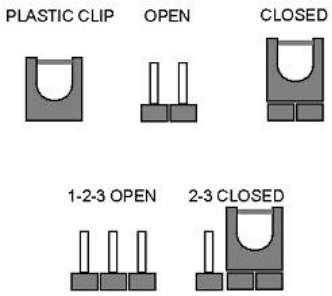



**Figure 4-36: Jumpers**

The AV-6962 has one on-board jumper (**Table 4-29**).

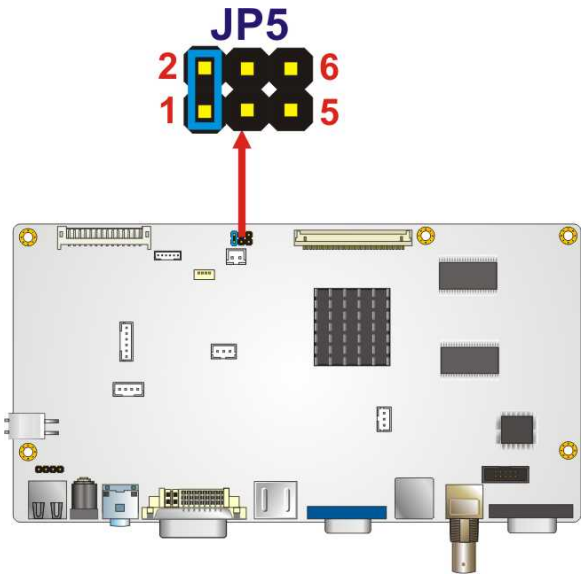



**Figure 4-37: Jumper Locations**

### 4.7.1 LCD Panel Voltage Select Jumper

| | |
|---|---|
| Jumper Label: | JP5 |
| Jumper Type: | 6-pin header |
| Jumper Location: | See **Figure 4-37** |
| Jumper Settings: | See **Table 4-42** |

The JP5 jumper sets the voltage to the LCD panel.

| JP5 | Description |
|---|---|
| 1-2 | Panel Voltage select 3.3V (Default) |
| 3-4 | Panel Voltage select 5V |
| 5-6 | Panel Voltage select 12V |

**Table 4-42: LCD Panel Voltage Select Jumper Settings**

## 4.8 AV-6962 External (Rear Panel) Connectors

**Figure 4-38** shows the AV-6962 external (rear panel) connectors. The peripheral connectors on the back panel of the monitor can connect to external devices. The peripheral connectors on the rear panel are:

- 1 x Audio jack
- 1 x Component video connector
- 1 x Composite video connector
- 1 x Digital input connector
- 1 x Power input connector
- 1 x RS-232 connector
- 1 x S-Video connector
- 1 x USB connector
- 1 x VGA connector

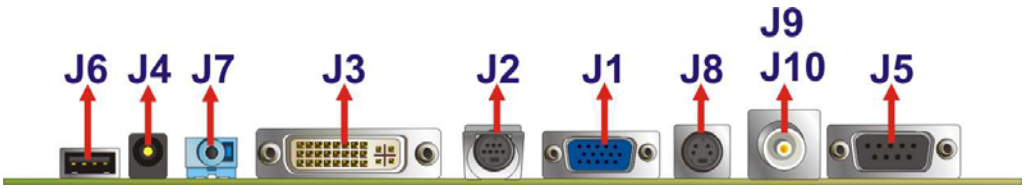



**Figure 4-38: AV-6962 External (Bottom Panel) Connectors**

### 4.8.1 Audio Jack

| | |
|---|---|
| CN Label: | J7 |
| CN Type: | Audio jack |
| CN Pinouts: | See **Table 4-43** |
| CN Location: | See **Figure 4-38** |

Use the audio jack to connect audio input to the monitor.

| PIN | DESCRIPTION |
|---|---|
| 1 | AGND |
| 2 | Audio_Iutput_Left |
| 3 | AGND |
| 4 | AGND |
| 5 | Audio_Iutput_Right |

**Table 4-43: Audio Jack Pinouts**

### 4.8.2 Component Video Connector

CN Label: J2

CN Type: mini-DIN 7 component video connector

CN Pinouts: See **Table 4-44**

CN Location: See **Figure 4-38** and **Figure 4-39**

Use the mini-DIN 7 component video connector to connect to the system graphics interface.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | VGND | 5 | VGND |
| 2 | Pb | 6 | Pr |
| 3 | VGND | 7 | VGND |
| 4 | Y | | |

**Table 4-44: Component Video Connector Pinouts**

**Figure 4-39: Component Video Connector Pinout Locations**

### 4.8.3 Composite Video Connector

CN Label: J9, J10

CN Type: Composite BNC connector

CN Pinouts: See **Table 4-45** and **Table 4-46**

CN Location: See **Figure 4-38**

Use the composite video connector to connect to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | VGND |
| 2 | CVBS-IN |

**Table 4-45: Composite Signal Input BNC Connector (J10) Pinouts**

| PIN | DESCRIPTION |
|---|---|
| 1 | CVBS-IN |
| 2 | VGND |
| 3 | VGND |
| 4 | VGND |

**Table 4-46: Composite Signal Input Connector (J9) Pinouts**

### 4.8.4 Digital Input Connector

CN Label: J3

CN Type: DVI-D connector

CN Pinouts: See **Table 4-47**

CN Location: See **Figure 4-38** and **Figure 4-40**

The 24-pin female dual link digital only DVI (Digital Visual Interface) connector is a standard for high-speed, high-resolution digital displays.

| PIN | DESCRIPTION | PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | RX2- | 9 | RX1- | 17 | RX0- |
| 2 | RX2+ | 10 | RX1+ | 18 | RX0+ |
| 3 | GND | 11 | GND | 19 | GND |
| 4 | NC | 12 | NC | 20 | NC |
| 5 | NC | 13 | NC | 21 | NC |
| 6 | DVI-SCL | 14 | DVI-5V | 22 | GND |
| 7 | DVI-SDA | 15 | GND | 23 | RXC+ |
| 8 | NC | 16 | HOT-PLUG | 24 | RXC- |

**Table 4-47: DVI-D Connector Pinouts**

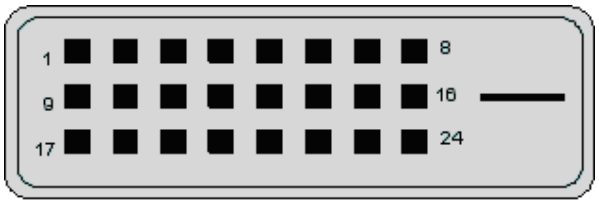



**Figure 4-40: DVI-D Connector Pinout Locations**

### 4.8.5 DC 12V Connector

CN Label: J4

CN Type: DC 12V Jack

CN Pinouts: See **Table 4-48**

CN Location: See **Figure 4-38**

Use the DC 12V connector to power the monitor.

| PIN | DESCRIPTION |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | +12V |

**Table 4-48: DC 12V Connector Pinouts**

### 4.8.6 RS-232 Touch Panel Connector

CN Label: J5

CN Type: DB-9 female connector

CN Pinouts: See **Table 4-49**

CN Location: See **Figure 4-38**

Use the rear panel standard RS-232 DB-9 female touch panel connector to connect the monitor to the system graphics interface.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | NRLSD | 7 | NRTS |
| 2 | NRX | 8 | NCTS |
| 3 | NTX | 9 | NRI |
| 4 | NDTR | 10 | GND |
| 5 | GND | 11 | GND |
| 6 | NDSR | | |

**Table 4-49: RS-232 Touch Panel Connector Pinouts**

### 4.8.7 S-Video Connector

CN Label: J8

CN Type: mini-DIN 4 S-Video connector

CN Pinouts: See **Table 4-50**

CN Location: See **Figure 4-38** and **Figure 4-41**

Use the mini-DIN 4 S-Video connector to connect to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | VGND |
| 2 | VGND |
| 3 | Y-IN |
| 4 | C-IN |

**Table 4-50: S-Video Connector Pinouts**

**Figure 4-41: S-Video Connector Pinout Locations**

### 4.8.8 USB Touch Panel Connector

CN Label: J6

CN Type: USB port

CN Pinouts: See **Table 4-51**

CN Location: See **Figure 4-38** and **Figure 4-42**

Use the rear panel standard USB touch panel connector to connect the monitor to the system graphics interface.

| PIN | DESCRIPTION |
|---|---|
| 1 | NC |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |

**Table 4-51: USB Touch Panel Connector Pinouts**

**Figure 4-42: USB Touch Panel Connector**

### 4.8.9 VGA Connector

CN Label: J1

CN Type: D-sub 15 female connector

CN Pinouts: See **Table 4-52**

CN Location: See **Figure 4-38** and **Figure 4-43**

Use the standard D-sub 15-pin VGA connector to connect the monitor to a system.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | Red | 9 | No Connect |
| 2 | Green | 10 | Ground |
| 3 | Blue | 11 | No Connect |
| 4 | No Connect | 12 | DDC DAT |
| 5 | Ground | 13 | Horizontal Synchronization |
| 6 | Ground | 14 | Vertical Synchronization |
| 7 | Ground | 15 | DDC Clock |
| 8 | Ground | | |

**Table 4-52: VGA Connector Pinouts**

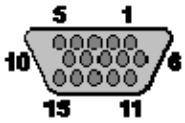



**Figure 4-43: VGA Connector Pinout Locations**

Chapter

5

# Installation

5.1 I

## 5.2 nstallation Precautions

**WARNING:**

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

**WARNING:**

Over-tightening rear cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

When installing the AFL series industrial monitor, please follow the precautions listed below:

- **Read the user manual**: The user manual provides a complete description of the AFL series industrial monitor, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the monitor must be disconnected when installing the AFL series industrial monitor, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the monitor is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The AFL series industrial monitor must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Mounting**: Since the monitor may weigh up to 10 kg (not including a swing arm or other accessories), please ensure at least two people assist with mounting the monitor.
- **Air Circulation**: Make sure there is sufficient air circulation when installing the monitor. The monitor’s cooling vents must not be obstructed by any objects.

Blocking the vents can cause overheating of the monitor. Leave at least 5 cm of clearance around the monitor to prevent overheating.

- **Grounding**: The monitor should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the monitor.
- **Anti-static Discharge**: The rear panel of the monitor must to be removed to configure the monitor’s AD board voltage select jumper. When doing so, be sure the monitor is disconnected from its power source and take all necessary safety precautions to avoid electrocution and static discharge to the AD board. The use of a grounded wrist strap and an anti-static work pad is recommended.

## 5.3 Unpacking

### 5.3.1 Packaging

When shipped, the AFL series industrial monitor is wrapped in a plastic bag. Two polystyrene ends are placed on either side of the monitor. The monitor is then placed into a first (internal) cardboard box. This box is then sealed and placed into a second (external) cardboard box. The second box is also sealed. A bag containing accessory items is placed underneath the monitor, at the bottom of the internal (first) box.

### 5.3.2 Unpacking Procedure

To unpack the AFL series industrial monitor, follow the steps below:

**WARNING:**

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the AFL series industrial monitor has been properly installed. This ensures the screen is protected during the installation process.

**Step 1:** Use box cutters, a knife or a sharp pair of scissors to open the seal on the top side of the external (second) box.

**Step 2:** Open the external (second) box.

**Step 3:** Use box cutters, a knife or a sharp pair of scissors the seal on the top side of the internal (first) box.

**Step 4:** Lift the monitor out of the boxes.

**Step 5:** Remove both polystyrene ends, one from each side.

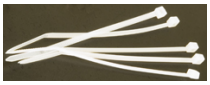
**Step 6:** Pull the plastic cover off the AFL series industrial monitor.

**Step 7:** Make sure all the components listed in the packing list are present.

### 5.3.3 Packing List

All the monitors in the AFL series are shipped with the following components:

| Quantity | Item | Image |
|---|---|---|
| 1 | AFL M Series Monitor | |
| 1 | AC power adapter | |
| 1 | Power cord | |
| 1 | DVI cable | |
| 1 | Audio cable | |

| | | |
|---|---|---|
| 1 | Component cable | |
| 1 | VGA cable | |
| 1 | Remote control | |
| 1 | Screw set<br>(5 x Flat head screws)<br>(5 x Round head screws) | |
| 5 | Wire strain bands |  |
| 1 | User manual and driver CD | |
| **Optional for Touch Panel (T-R) Models only** | | |
| 1 | Touch screen driver CD (T-R models only) | |
| 1 | Touch pen (T-R models only) | |
| 1 | RS-232 cable | |

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

## 5.4 Pre-installation Preparation

### 5.4.1 Tools

Before installing the AFL series industrial monitor, make sure the following tools are on hand:

- **Phillips (crosshead) screwdriver**: All the retention screws on the system are Phillips screws.
- **Soft working mat**: When the AFL series industrial monitor is installed, the screen is placed on the working surface. It is therefore important to rest the AFL series industrial monitor on a soft at that cannot damage the LCD screen on the front of the AFL series industrial monitor.

## 5.5 Connectors

**Table 5-1** lists the external peripheral interface panel connectors for the AFL series industrial monitors.

| AFL- | 07M | 08MH | 10M | 12M | 15M | 17M | 19M |
|---|---|---|---|---|---|---|---|
| Audio jack | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Component video | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Composite video | Yes | Yes | Yes | Yes | - | - | - |
| Composite BNC | - | - | - | - | Yes | Yes | Yes |
| DVI-D | - | - | - | - | Yes | Yes | Yes |
| Power (12V Jack) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| S-Video | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| VGA | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Touch Panel (Optional) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 5-1: External Peripheral Interface Connectors**

### 5.5.1 VGA Connector

Use the rear panel standard 15-pin female VGA connector to connect the monitor to the system graphics interface. See **Chapter 4** for the VGA connector location and pinouts.

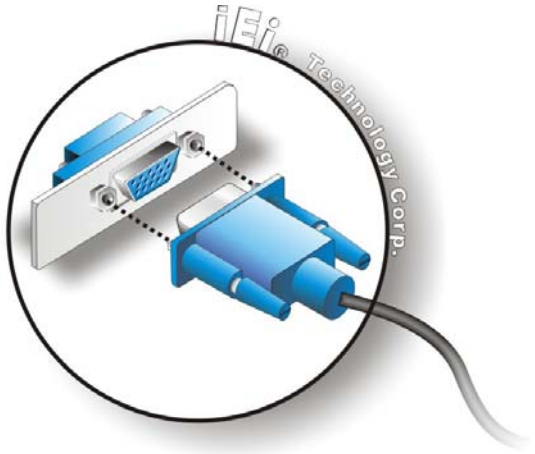


**Figure 5-1: VGA Connector**

### 5.5.2 12V Power Connector

Use the rear panel +12V DC jack to connect the monitor to a power source.

**Figure 5-2: 12V Power Connector**

### 5.5.3 DVI-D Connector (AFL-15M/17M/19M Models Only)

Use the rear panel standard 24-pin female DVI-D connector to connect the monitor to the system graphics interface. See **Chapter 4** for the DVI-D connector location and pinouts.

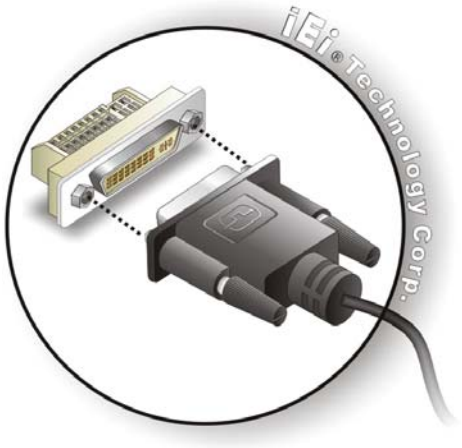


Figure 5-3: DVI Connector

### 5.5.4 Optional RS-232 Touch Panel Connector

Use the rear panel standard RS-232 DB-9 female touch panel connector to connect the monitor to the touch panel.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | NRLSD | 6 | NCTS |
| 2 | NDSR | 7 | NDTR |
| 3 | NRX | 8 | NRI |
| 4 | NRTS | 9 | GND |
| 5 | NTX | | |

Table 5-2: Optional RS-232 Touch Panel Connector Pinouts

Figure 5-4: Optional RS-232 Touch Panel Connector

### 5.5.5 Optional USB Touch Panel Connector

Use the rear panel standard USB touch panel connector to connect the monitor to the touch panel.

| PIN | DESCRIPTION |
|---|---|
| 1 | NC |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |

**Table 5-3: USB Touch Panel Connector Pinouts**

**Figure 5-5: USB Touch Panel Connector**

## 5.6 Mounting the AFL Series Industrial Monitor

The AFL series industrial monitor can be mounted in a panel or wall. The monitor can also be mounted on a monitor arm or stand. The mounting methods are described below.

**CAUTION:**

*When mounting the monitor take care to tighten the retention screws or bolts until fully secure, but do not over tighten. Over tightening the retention screws or bolts may cause them to become stripped, rendering them useless.*

### 5.6.1 Mounting Kits

**Table 5-4** lists the different mounting kits available from IEI.

| | AFL-07M | AFL-08MH | AFL-10M | AFL-12M | AFL-15M | AFL-17M | AFL-19M |
|---|---|---|---|---|---|---|---|
| **Panel Mounting Kits** | **AFLPK-08** | | **AFLPK-12** | | **AFLPK-15** | **AFLPK-17** | **AFLPK-19** |
| **Wall Mounting Kits** | **AFLWK-12** | | | | **AFLWK-19** | | |
| **Rack Mounting Kits** | **AFLRK-07** | **AFLRK-08** | **AFLRK-10** | **AFLRK-12** | **AFLRK-15** | **AFLRK-17** | **N/A** |
| **LCD Monitor Stand** | **STAND-A08** | | **STAND-A12** | | **STAND-A19/STAND-B19** | | |

**Table 5-4: Mounting Kits**

### 5.6.2 Panel Mounting

#### 5.6.2.1 Standard Panel Mounting

The standard panel mounting procedure applies to the following AFL series industrial monitors:

- AFL-07M
- AFL-08MH
- AFL-10M
- AFL-12M

To mount the AFL series industrial monitor into a panel, please follow the steps below.

**Step 1:** Select the position on the panel to mount the monitor.

**Step 2:** Cut out a section of the panel that corresponds to the rear panel dimensions of the monitor. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the monitor but just large enough for the rear panel of the monitor to fit through (**Figure 5-6**, **Figure 5-7** and **Figure 5-8**).

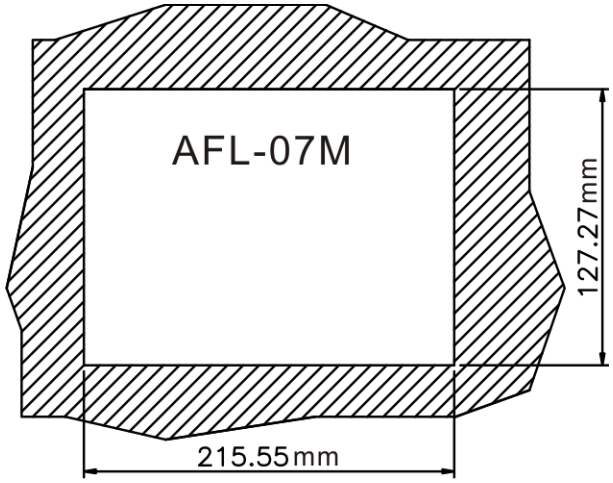



**Figure 5-6: AFL-07M Panel Opening**

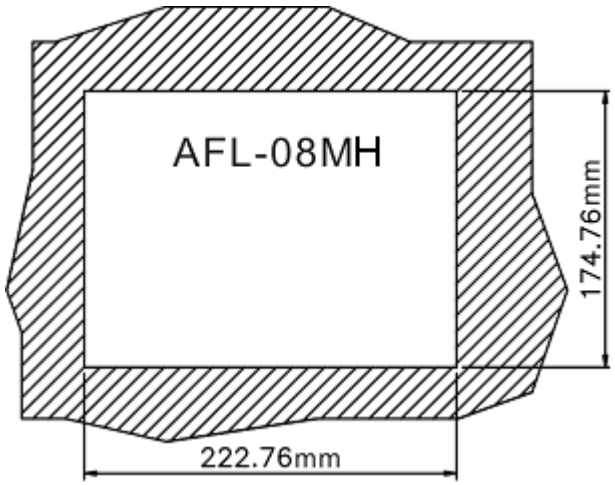



**Figure 5-7: AFL-08MH Panel Opening**

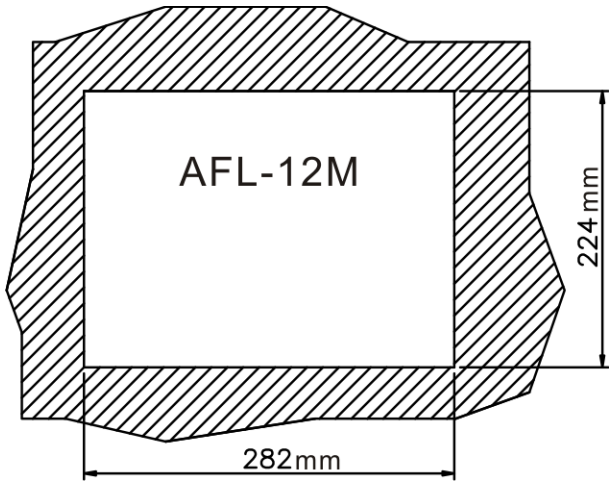



**Figure 5-8: AFL-12M Panel Opening**

**Step 3:** Slide the monitor through the hole until the metal frame is flush against the panel (**Figure 5-9**).

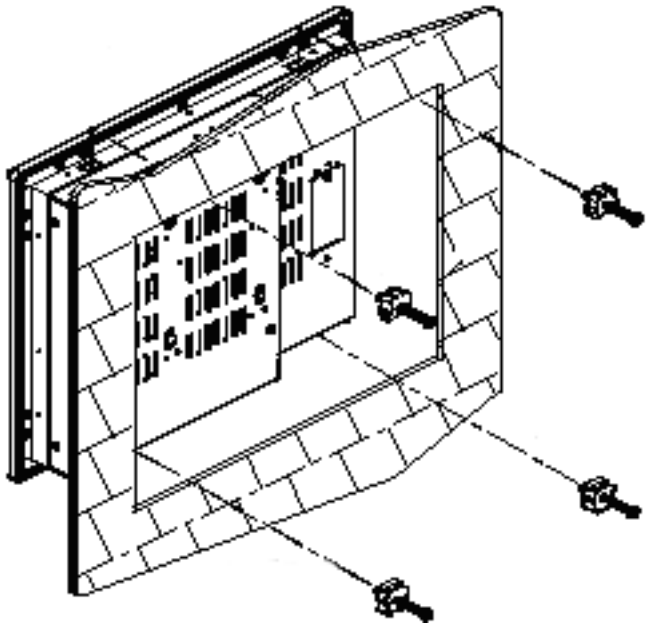


**Figure 5-9: Insert the Monitor**

**Step 4:** Insert the panel mounting clamps into the pre-formed holes along the edges of the monitor, behind the metal frame. Refer to **Table 2-3** for the required number of mounting clamps.

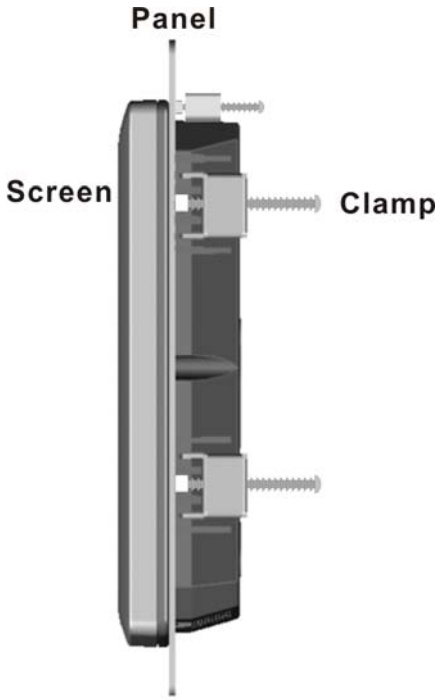



**Figure 5-10: Tighten the Panel Mounting Clamp Screws (AFL-12M)**

**Step 5:** Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 5-10**).

### 5.6.3 Wall Mounting

The AFL series industrial monitor has Video Electronics Standards Association (VESA) standard mounting holes tapped into the rear panel. The standard holes are M4 set at 75mm x 75mm and/or 100mm x 100mm apart and support wall, arm or stand mount. **Table 5-5** lists the VESA layouts of the AFL series industrial monitor.

| Model | VESA Standard |
|---|---|
| AFL-07M/08MH | 75mm x 75mm |
| AFL-10M/12M | 75mm x 75mm and 100mm x 100mm |
| AFL-15M/17M/19M | 100mm x 100mm |

**Table 5-5: AFL Series VESA Standard**

### 5.6.4 AFL-07M/08MH/10M/12M Wall Mounting

To mount the AFL-07M/08MH/10M/12M monitor onto the wall, please follow the steps below.

**Step 1:** Select the location on the wall for the wall-mounting bracket.

**Step 2:** Carefully mark the locations of the four brackets screw holes on the wall.

**Step 3:** Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

**Step 4:** Align the wall-mounting bracket screw holes with the pilot holes.

**Step 5:** Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 5-11**).

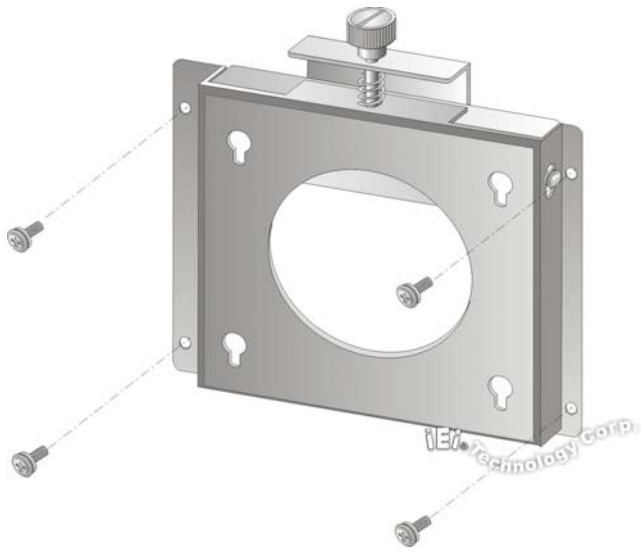


**Figure 5-11: Wall-mounting Bracket**

**Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the monitor and tighten until the screw shank is secured against the rear panel (**Figure 5-12**).

**Step 7:** Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

**Step 8:** Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 5-12**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

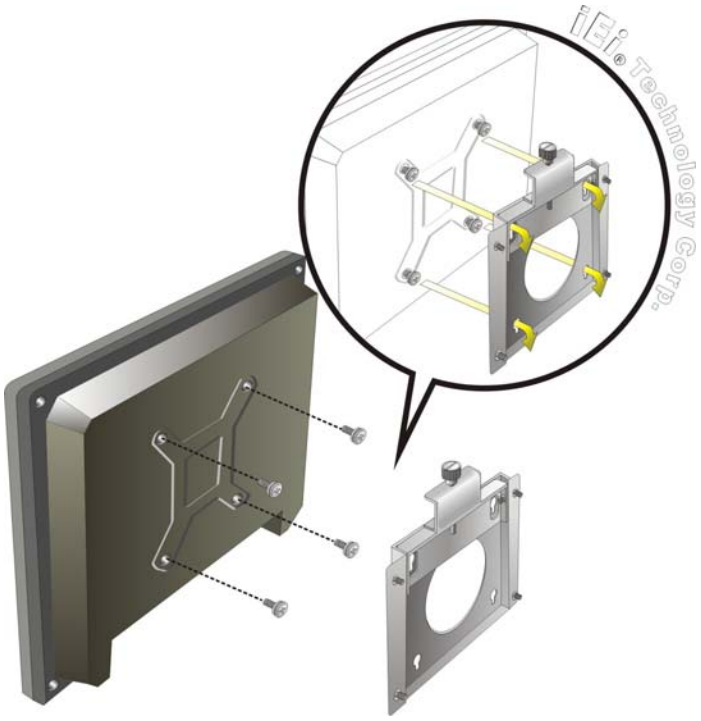


**Figure 5-12: Chassis Support Screws**

**NOTE:**

In the diagram below the bracket is already installed on the wall.

**Step 9:** Secure the monitor by fastening the retention screw of the wall-mounting bracket. (**Figure 5-13**).

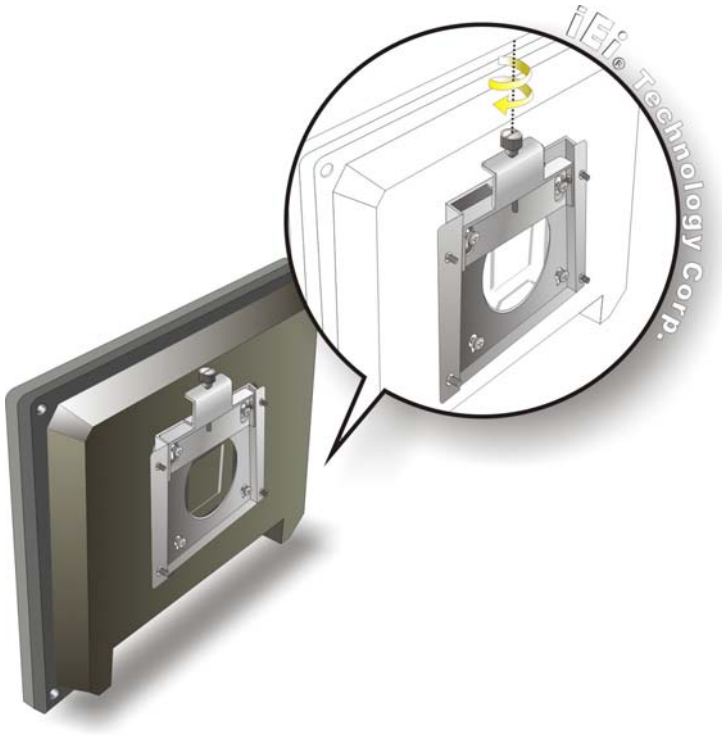


**Figure 5-13: Secure the Monitor**

### 5.6.4.1 AFL-15M/17M/19M Wall Mounting

To mount the AFL-15M/17M/19M monitor onto the wall, please follow the steps below.

**Step 1:** Select the location on the wall for the wall-mounting bracket.

**Step 2:** Carefully mark the locations of the four brackets screw holes on the wall.

**Step 3:** Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

**Step 4:** Align the wall-mounting bracket screw holes with the pilot holes.

**Step 5:** Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 5-14**).

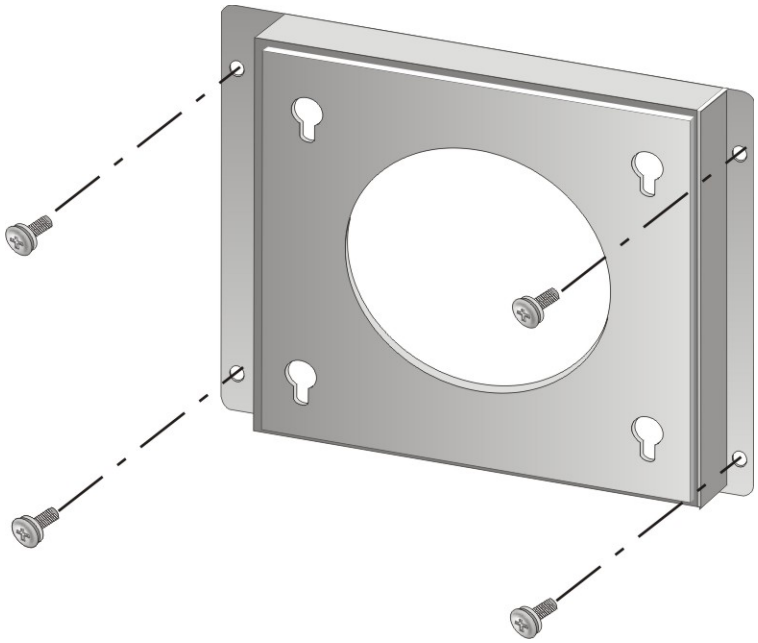


**Figure 5-14: Wall-mounting Bracket**

**Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the monitor and tighten until the screw shank is secured against the rear panel (**Figure 5-15**).

**Step 7:** Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

**Step 8:** Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 5-15**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

**NOTE:**

In the diagram below the bracket is already installed on the wall.

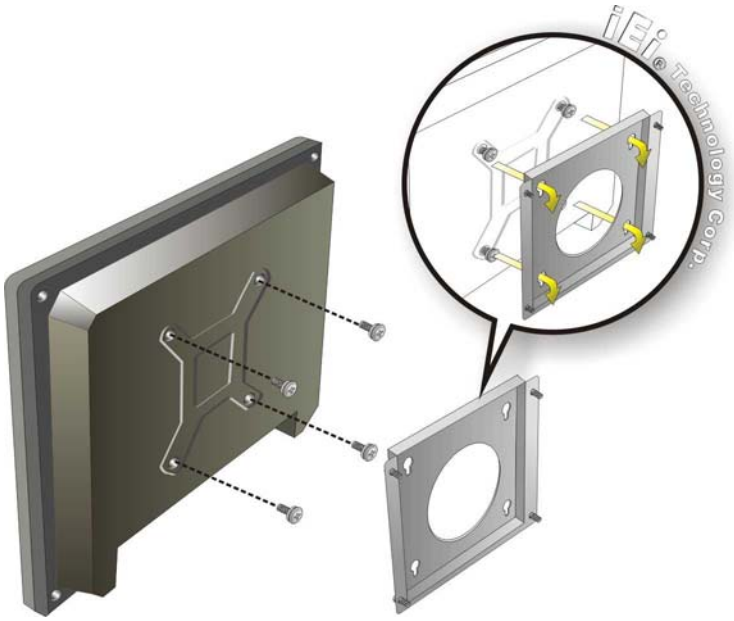


**Figure 5-15: Chassis Support Screws**

### 5.6.5 Monitor Stand Installation

The AFL series industrial monitor has Video Electronics Standards Association (VESA) standard mounting holes tapped into the rear panel. The monitor stand mounting plate has a matching VESA hole pattern. To mount the AFL series industrial monitor onto a stand, please follow the steps below.

**Step 1:** Line up the threaded holes on the monitor rear panel with the screw holes on the monitor stand mounting plate.

**Step 2:** Secure the monitor to the stand with the supplied retention screws (**Figure 5-16**).

**Figure 5-16: Monitor Stand Mounting**

### 5.6.6 Arm Mounting

The AFL series is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75mm or 100mm interface pad. To mount the AFL series on an arm, please follow the steps below.

**Step 1:** The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

**NOTE:**

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75mm or 100mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL series monitor.

**Step 2:** Once the mounting arm has been firmly attached to the surface, lift the monitor onto the interface pad of the mounting arm.

**Step 3:** Align the retention screw holes on the mounting arm interface with those in the monitor. The AFL-07M/08MH arm mount retention screw holes are shown in

**Figure 5-17**, the AFL-10M/12M are shown in **Figure 5-18** and the AFL-15M/17M/19M are shown in **Figure 5-19**.

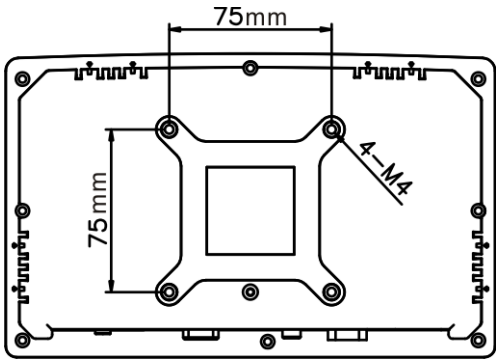



**Figure 5-17: AFL-07M/AFL-08MH Arm Mounting Retention Screw Holes**

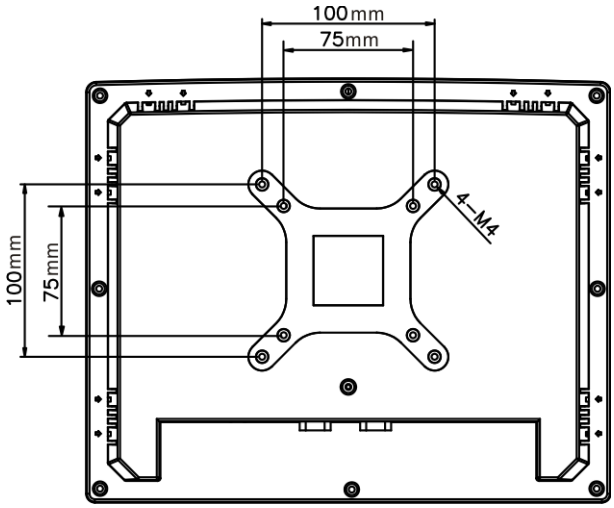



**Figure 5-18: AFL-10M/12M Arm Mounting Retention Screw Holes**

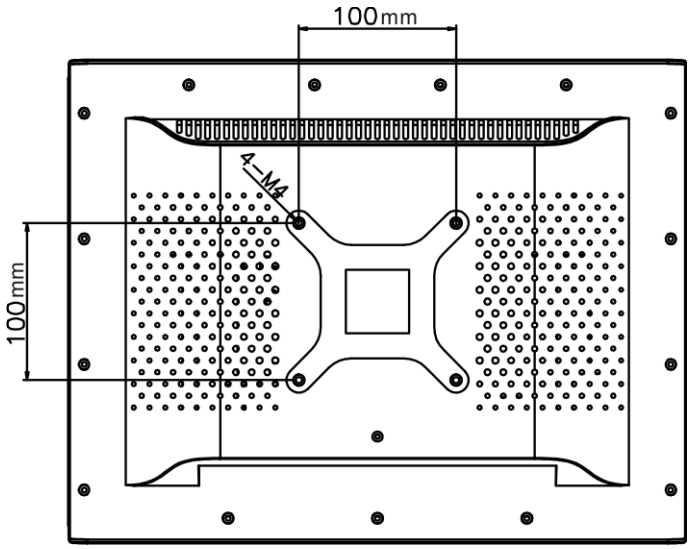



**Figure 5-19: AFL-15M/17M/19M Arm Mounting Retention Screw Holes**

**Step 4:** Secure the monitor to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the monitor.

Chapter

6

# On-Screen-Display (OSD) Controls

# 6.1 User Mode OSD Structure

## 6.1.1 OSD Buttons

There are several on-screen-display (OSD) control buttons oriented either vertically on the right side of the monitor front panel or on the bottom of the monitor front panel. **Figure 6-1** shows a typical arrangement of OSD controls.

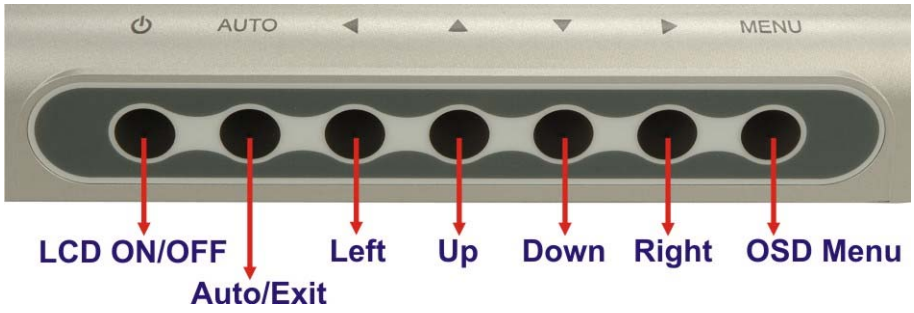



**Figure 6-1: OSD Control Buttons**

- **LCD ON/OFF Button**
  Press this button to turn the LCD monitor on or off. When the LCD monitor is on, the power LED is turned on in green.
- **Auto/Exit Button**
  Press this button to enable auto-configuration, apply default values or exit the menu.
- **Up Button**
  Press this button to scroll up or to switch from one selected item to another.
- **Down Button**
  Press this button to scroll down or to switch from one selected item to another.
- **Left Button**
  Press this button to scroll to the left, to decrease the value, or to switch from one selected item to another.
- **Right Button**
  Press this button to scroll to the right, to increase the value, or to switch from one selected item to another.

- **Menu/Enter Button**

Press this button to open the OSD window. When inside a menu, press this button to confirm the function adjustment or selection of the item. There may be several levels in one item. As you select an item in the menu, the sub-items will be displayed.

- **Lock Function**

  To lock the all the control buttons hold-down both the "**Auto**" and "**Right**" buttons simultaneously for 2.0 seconds. To unlock the control buttons hold-down both the "**Auto**" and "**Left**" buttons simultaneously for 2 seconds.

### 6.1.2 OSD Menu Structure

**Table 6-1** shows the OSD menu structure for all models of the AFL series LCD monitor.

| Level 0 | Level 1 | Value | |
|---|---|---|---|
| Image Menu | Brightness | 0 to 100 | |
| | Contrast | 0 to 100 | |
| | Sharpness | 0 to 100 | |
| Display Menu | Auto Adjust | Select | |
| | Phase | 0 to 100 | |
| | Clock | 0 to 100 | |
| | Display Control | Display Image | Auto, 1:1, Aspect |
| | | Aspect Ratio | Auto, 4x3, 14x9, 16x9, >16x9 |
| | | Display Position | Select |
| PiP Menu | PiP | On, Off | |
| | PiP Input Select | VGA, YpbPr, DVI, Svideo, CVBS | |
| | PiP Size | Small, Medium, Large, Side | |
| | PiP Position | Select | |
| | PiP Color Controls | Brightness | 0 to 100 |
| | | Contrast | 0 to 100 |
| | Blend | 0 to 100 | |
| Color Menu | Auto Color | Select | |
| | Color Temperature | USER | Red (0 to 100)<br>Green (0 to 100)<br>Blue (0 to 100) |

| | | | |
|---|---|---|---|
| | | 4200K, 5000K, 6500K, 7500K, 9300K | |
| | sRGB | Off, On | |
| System Menu | Audio | Mute | On, Off |
| | | Volume | 0 to 100 |
| | Factory Reset | Select | |
| | Information | Select | |
| | Input Select | VGA, YpbPr, DVI, Svideo, CVBS | |
| | Language | English | |
| | Misc | | |
| | OSD Configuration | OSD Timer | Off, 5 sec, 10 sec, 15 sec, 20 sec, 25 sec, 30 sec |
| | | OSD Position | Select |
| | | OSD Transparency | 0 to 100 |
| | | OSD Zoom | 0 to 100 |
| | Auto Brightness | Auto Brightness | On |
| | | | Off |

**Table 6-1: OSD Menus**

## 6.2 Using the OSD

OSD menu options are described below.

### 6.2.1 Image Menu

Image menu options are shown in **Figure 6-2**.

**Figure 6-2: Image Menu**

**Brightness** Adjusts the brightness of screen. This function adjusts the offset value of ADC. Setting this value too high or too low will affect the quality of image. When the auto dimming function is turned on, the brightness control is not effective.

**Contrast** Adjusts the gain value of ADC. Adjusting this value too high or too low will worsen the quality of image.

**Sharpness** Adjusts the sharpness level. This option may help reduce the softening edges around the displayed objects.

### 6.2.2 Display Menu

Display options are shown in **Figure 6-3**.

**Figure 6-3: Display Menu**

| | |
|---|---|
| **Auto Adjust** | Automatically adjusts the LCD screen position. |
| **Phase** | Adjusts the input signal (Analog only) |
| **Clock** | Adjusts the dot clock position |
| **Display Control** | This item allows adjustment of the following items.<br>▪ **Display Image** – Adjusts the size of the display image<br>▪ **Display Position** – Adjusts the horizontal and vertical position of the display screen |

### 6.2.3 PiP Menu

The PiP options are shown in **Figure 6-4**.

**Figure 6-4: PiP Menu**

PiP options are described below.

| | |
|---|---|
| **PiP** | Turns the Picture-in-Picture feature on or off |
| **PiP Input Select** | Selects the display input |
| **PiP Size** | Selects the size of the PiP frame |
| **PiP Position** | Adjusts the position of the PiP frame |
| **PiP Color Controls** | Adjusts the color settings of the PiP frame |
| **Blend** | Adjusts blend settings |

### 6.2.4 Color Menu

Color options are shown in **Figure 6-5**.

**Figure 6-5: Color Menu**

Color options are described below.

| | |
|---|---|
| **Auto Adjust** | Automatically adjusts the color hues |
| **Color Temperature** | Fine-tunes the palette of color hues |
| **sRGB** | Fine-tunes the balance among the Red, Green, and Blue color hues if images look garish or unrealistic |

### 6.2.5 System Menu

System options are shown in **Figure 6-6**.

**Figure 6-6: System Menu**

System options are described below.

| | |
|---|---|
| **Audio** | Mutes the audio or adjusts audio volume. |
| **Factory Reset** | Restores the default OSD settings. Note that this will restore all default display settings. |
| **Information** | Provides information on the LCD monitor, such as model number, input device, and resolution |
| **Input Select** | Allows selection of input device to use |
| **Language** | Provides options for selecting OSD screen legends in a preferred language |
| **Misc** | Provides options for OSD configuration and auto-brightness (auto-dimming) |

### 6.2.5.1 OSD Configuration

OSD configurations are shown in **Figure 6-7**.

**Figure 6-7: OSD Configuration**

OSD configuration options are described below.

| | |
|---|---|
| **OSD Timer** | Determines how many seconds the OSD screen stays on screen before it disappears when OSD is left unattended. |
| **OSD Position** | Adjusts the OSD position on the screen. Use the arrow buttons on the OSD control panel to move the OSD screen |
| **OSD Transparency** | Adjusts the transparency of the OSD screen |
| **OSD Zoom** | Turns the OSD zoom feature on or off |

### 6.2.5.2 Auto-Brightness (Auto-Dimming) Configuration

The AFL series features an auto-dimming function. Use the OSD to turn this function on or turn off. The auto-dimming screen is shown in **Figure 6-8**. Refer to **Appendix 8.1C** for details.

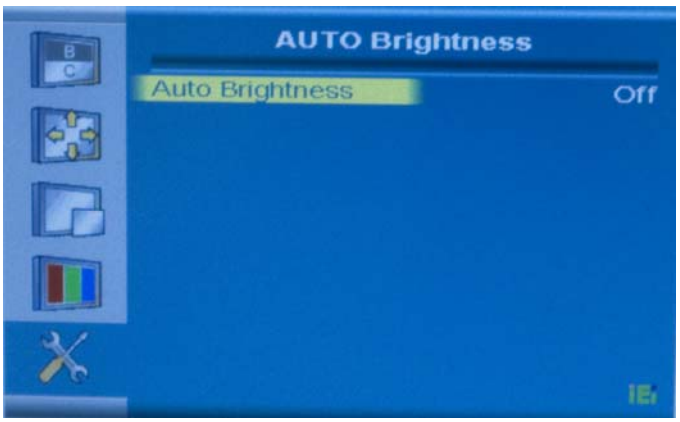



**Figure 6-8: Auto Brightness Configuration**

Auto Brightness configuration options are described below.

| | |
|---|---|
| **On** | Turns the auto-dimming function on. When auto-dimming is turned on, the auto-dimming LED on the OSD panel is on and the monitor automatically adjusts the brightness depending on ambient light conditions. |
| **Off** | Turns the auto-dimming function off. |

## 6.3 Remote Contol

The AFL series comes with a remote control for easy configuration of OSD settings. **Figure 6-9** shows the remote control and its function keys.

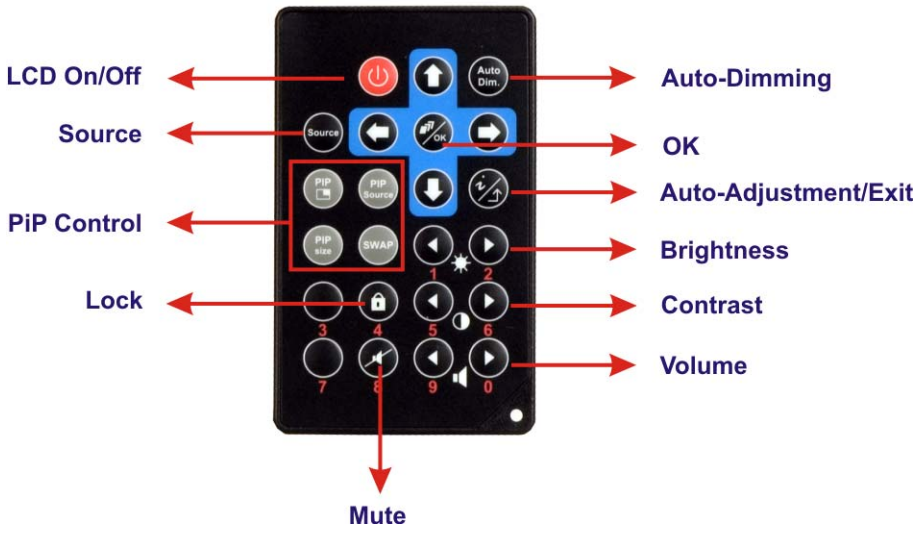



**Figure 6-9: Remote Control**

- **LCD On/Off**. Press this button to turn the LCD monitor on or off.
- **Source**. Press this button to select the source that is to be used.
- **PiP Control**. Use these control keys to turn the PiP function on or off; set the PiP source (primary, larger) image, set the PiP frame size, and switch the images.
- **Lock**. Press this button to lock and un-lock the system configuration buttons to prevent accidental adjustments.
- **Mute**. Press this button to turn off the audio.
- **Auto-Dimming**. Press this button to turn the auto-dimming function on or off.
- **OK**. Press this button to confirm a setting or an adjustment made.
- **Auto-Adjustment/Exit**. Press this button to let the system automatically configure the OSD settings or to exit the current menu.
- **Brightness**. Use these control buttons to adjust the brightness of the LCD screen.
- **Contrast**. Use these control buttons to adjust the contrast values.
- **Volume**. Press this button to adjust the audio volume level.

Chapter

7

# Software Drivers

## 7.1 Introduction

The touch panel controller enables analog resistive touch panels for four-wire, five-wire & eight-wire models. The controller directly communicates with the PC system through the touch panel communications interface. The controller design is superior in sensitivity, accuracy, and friendly operation. The touch panel driver emulates the left mouse button and the right mouse button functions.

The touch panel driver supports the following operating systems:

- Microsoft® Windows® versions:
  - Microsoft® Windows® 2000
  - Microsoft® Windows® XP
  - Microsoft® Windows® 2003
  - Microsoft® Windows® 2008
  - Microsoft® Windows® Vista
  - Microsoft® Windows® 7
- Microsoft® Windows® CE versions:
  - Microsoft® Windows® CE 4.2
  - Microsoft® Windows® CE 5.0
  - Microsoft® Windows® CE 6.0
- Linux Kernel 2.6
- DOS

Driver installation is described below.

## 7.2 7-inch to 12.1-inch Driver Installation and Configuration

### 7.2.1 RS-232 or USB Touch Screen

Before installing the driver, connect the Afolux monitor to the motherboard. The 7-inch to 12.1-inch Afolux monitors support touch screen modality through an RS-232 or USB interface connection. Decide through which interface the touch screen is to be controlled.

- **RS-232 Interface:** If the touch screen interface connection is an RS-232 connection, connect the RS-232 connector on the sing board computer to the DB-9 connector on the bottom of the Afolux monitor.

- **USB Interface:** If the touch screen interface connection is a USB connection, connect the USB connector on the sing board computer to the external USB port connector on the bottom of the Afolux monitor.

### 7.2.2 7-inch to 12.1-inch Touch Panel Driver Installation

**WARNING:**

Before the touch screen driver is installed, make sure the system is connected to the monitor with a USB cable or an RS-232 null cable. Also, make sure the VGA connector on the system is connected to the VGA connector on the bottom of the monitor.

To install the touch panel driver for the 7” to 12.1” please follow the instructions below:

**Step 1:** **Connect the Afolux monitor to the single board computer**. See above.

**Step 2:** **Install the driver CD**. Install the driver CD into the system to which the Afolux monitor is connected.

**Step 3:** Select the **Touch Screen** option in the menu of driver CD. The directory in **Figure 7-1** appears.

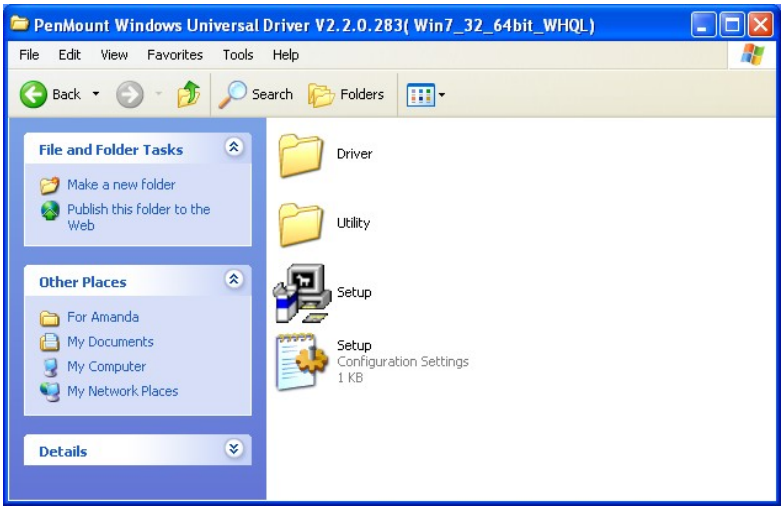


**Figure 7-1: Setup Icon**

**Step 4:** Double click the setup icon in **Figure 7-1**.

**Step 5:** The Welcome screen in **Figure 7-2** appears.

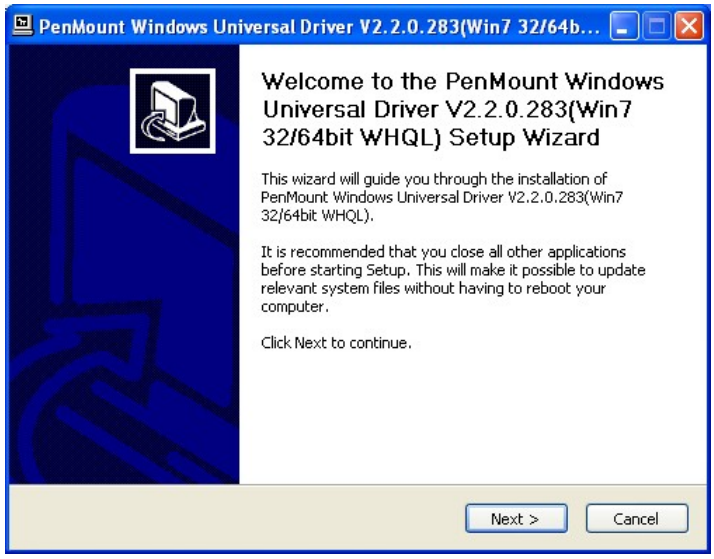

PenMount Windows Universal Driver V2.2.0.283(Win7 32/64b...
Welcome to the PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL) Setup Wizard
This wizard will guide you through the installation of PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL).
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

**Figure 7-2: Welcome Screen**

**Step 6:** Click **Next** to continue.

**Step 7:** The license agreement in **Figure 7-3** appears. Accept the terms of the agreement by clicking **I Agree**.

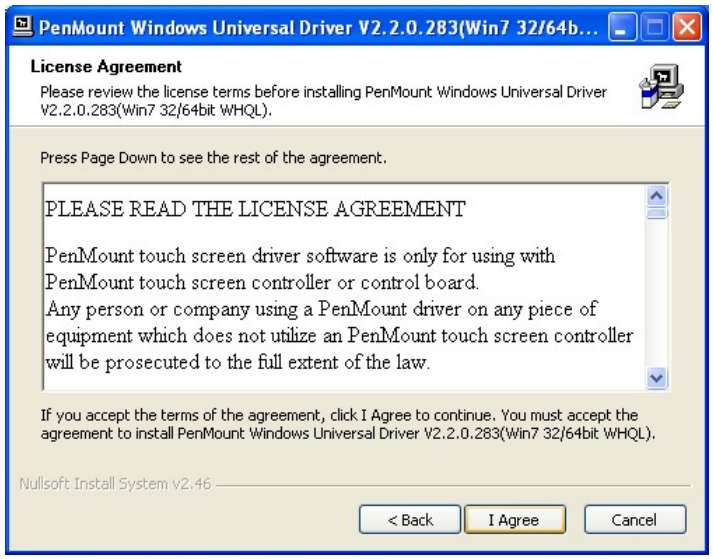

PenMount Windows Universal Driver V2.2.0.283(Win7 32/64b...
License Agreement
Please review the license terms before installing PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL).
Press Page Down to see the rest of the agreement.
PLEASE READ THE LICENSE AGREEMENT
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL).
Nullsoft Install System v2.46
< Back
I Agree
Cancel

**Figure 7-3: License Agreement**

**Step 8:** The installation destination screen appears. See **Figure 7-4**. Click **Install**.

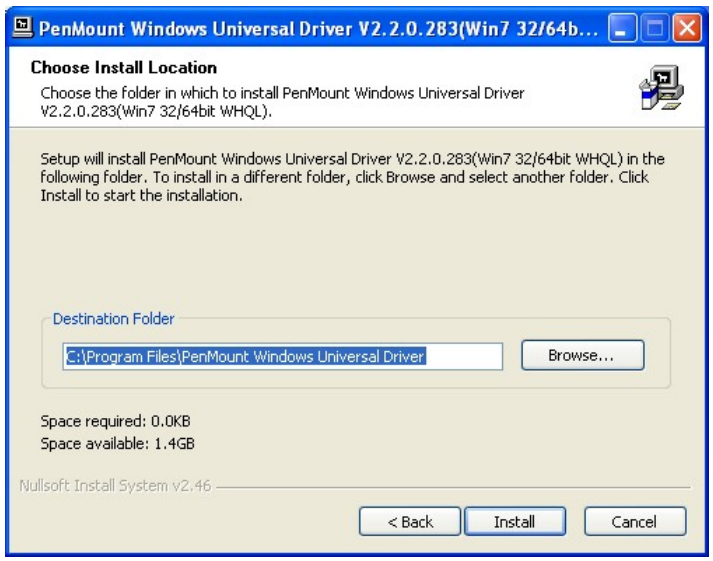

PenMount Windows Universal Driver V2.2.0.283(Win7 32/64b...
Choose Install Location
Choose the folder in which to install PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL).
Setup will install PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL) in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files\PenMount Windows Universal Driver
Browse...
Space required: 0.0KB
Space available: 1.4GB
Nullsoft Install System v2.46
< Back
Install
Cancel

**Figure 7-4: Initiate Install**

**Step 9:** The installation of the program begins. See **Figure 7-5**.

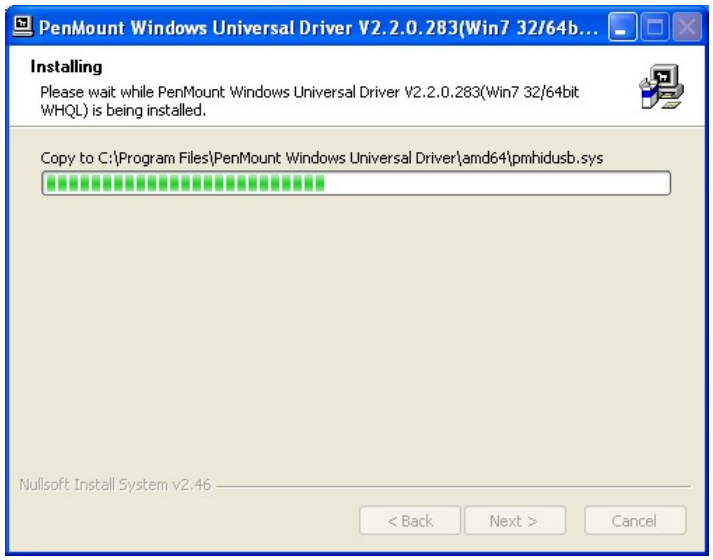

PenMount Windows Universal Driver V2.2.0.283(Win7 32/64b...
Installing
Please wait while PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL) is being installed.
Copy to C:\Program Files\PenMount Windows Universal Driver\amd64\pmhidusb.sys
Nullsoft Install System v2.46
< Back
Next >
Cancel

**Figure 7-5: Installation Starts**

**Step 10:** When the installation is complete, the complete screen appears. See **Figure 7-6**.

To complete the installation process click **Finish**.

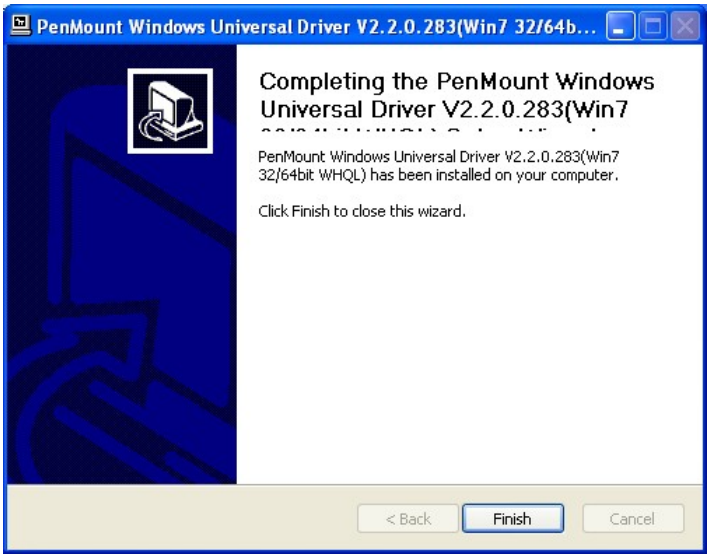

PenMount Windows Universal Driver V2.2.0.283(Win7 32/64b...
Completing the PenMount Windows Universal Driver V2.2.0.283(Win7
PenMount Windows Universal Driver V2.2.0.283(Win7 32/64bit WHQL) has been installed on your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel

**Figure 7-6: Finish Installation**

### 7.2.3 Change the Touch Screen Interface

If the touch screen interface must be changed from an RS-232 interface to a USB interface or, from a USB interface to an RS-232 interface, the following steps must be followed.

**Step 1:** Uninstall the touch screen driver

**Step 2:** Remove the interface cable i.e. remove the RS-232 cable or the USB cable

**Step 3:** Install the new cable i.e. install the USB cable or the RS-232 cable.

**Step 4:** Reinstall the driver CD as described above.

To uninstall the driver in Windows, please follow the steps below:

**Step 1:** Access the control panel. See **Figure 7-7**.

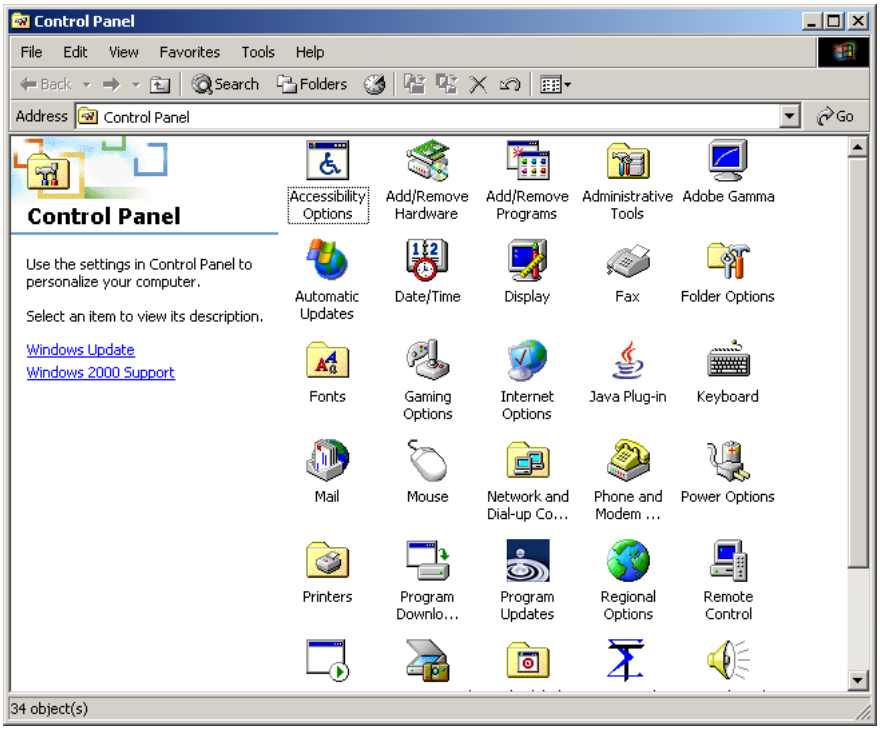



**Figure 7-7: Control Panel**

**Step 2:** Double click the **Add/Remove Programs** icon in **Figure 7-7**.

**Step 3:** Find the **PenMount DMC6000** driver and select remove. See **Figure 7-8**.

**Step 4:** The driver is removed.

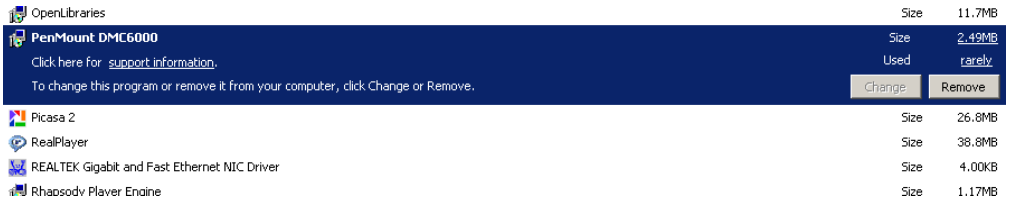



**Figure 7-8: Remove Touch Screen Driver**

### 7.2.4 7-inch to 12.1-inch Touch Panel Driver Configuration

To configure the touch panel driver options, refer to the TouchKit user manual located on the driver installation CD.

## 7.3 15-inch to 19-inch Driver Installation and Configuration

### 7.3.1 RS-232 or USB Touch Screen

Before installing the driver, connect the Afolux monitor to the motherboard. The 15-inch to 19-inch Afolux monitors support touch screen modality through either RS-232 or USB interface connection.

- **RS-232 Interface:** If the touch screen interface connection is an RS-232 connection, connect the RS-232 connector on the single board computer to the DB-9 connector on the bottom of the Afolux monitor.

- **USB Interface:** If the touch screen interface connection is a USB connection, connect the USB connector on the single board computer to the external USB port connector on the bottom of the Afolux monitor.

### 7.3.2 15-inch to 19-inch Touch Panel Driver Installation

**WARNING:**

Before the touch screen driver is installed, make sure the system is connected to the monitor with a USB cable or an RS-232 null cable. Also, make sure the VGA connector on the system is connected to the VGA connector on the bottom of the monitor.

To install the touch panel driver for the 15” to 19” Afolux please follow the instructions below:

**Step 1:** Connect the Afolux monitor to the single board computer. See above.

**Step 2:** Insert the driver CD that came with the AFL series industrial monitor into the CD drive.

**Step 3:** Once the CD drive is installed, the screen in **Figure 7-9** appears.

TouchKit Ver 4.3.0
Win9X / ME
WinNT4
Win2000 / XP
Other Driver
User Manual
Release Note
FAQ
We provide a full range of controllers for both analog resistive and capacitive touch panels.
The resistive controller communicates with the PC system directly through RS232, PS/2 or USB port.
The design is optimized for an accurate, sensitive and quick touch performance as well as an ease of use interface.
The driver supports a set of operating systems, i.e. Windows 95, Windows 98, Windows ME, Windows NT4, Windows 2000, Windows XP, Windows XP Tablet PC Edition, Windows CE 2.12 / 3.0 / .NET, DOS, iMac, RedHat / Mandrake Linux
CopyRight(c) 2000-2005,

**Figure 7-9: Driver CD Pop Up Screen**

**Step 4:** Select the operating system installed on the system from the menu on the left side of the screen.

**NOTE:**

The following description is for driver installation using a Windows 2000 OS. If a different OS is installed, please refer to the driver user manual for the relevant OS. The driver user manuals can be accessed by selecting “**User Manual**” from the menu on the left side of the “**Driver CD Pop Up Screen**”.

**Step 5:** Once the OS system is selected, the touch kit setup will prepare the install shield wizard (**Figure 7-10**).

Setup
TouchKit Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.

**Figure 7-10: Install Shield Wizard Preparation**

**Step 6:** After the Install Shield Wizard is ready, a welcome screen appears (**Figure 7-11**).

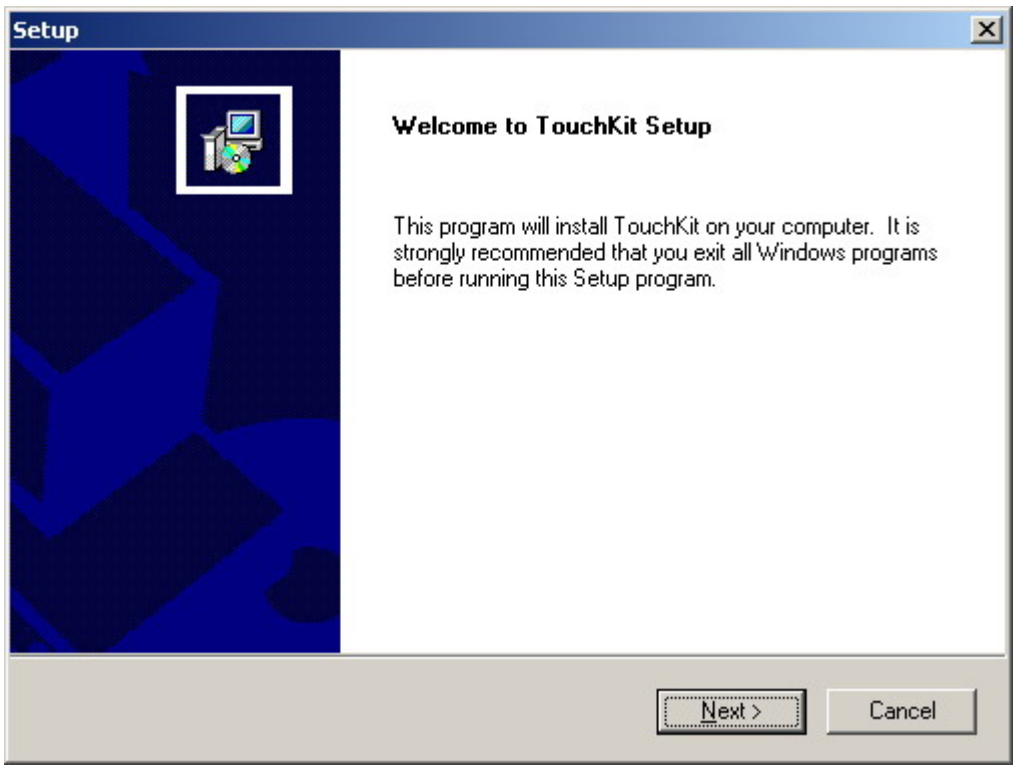

Setup
Welcome to TouchKit Setup
This program will install TouchKit on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program.
Next >
Cancel

**Figure 7-11: Welcome Screen**

**Step 7:** To continue the installation process click **NEXT**.

**Step 8:** An Install PS/2 interface driver screen appears (**Figure 7-12**). It is not necessary to install the PS/2 interface driver. To continue click **NEXT**.

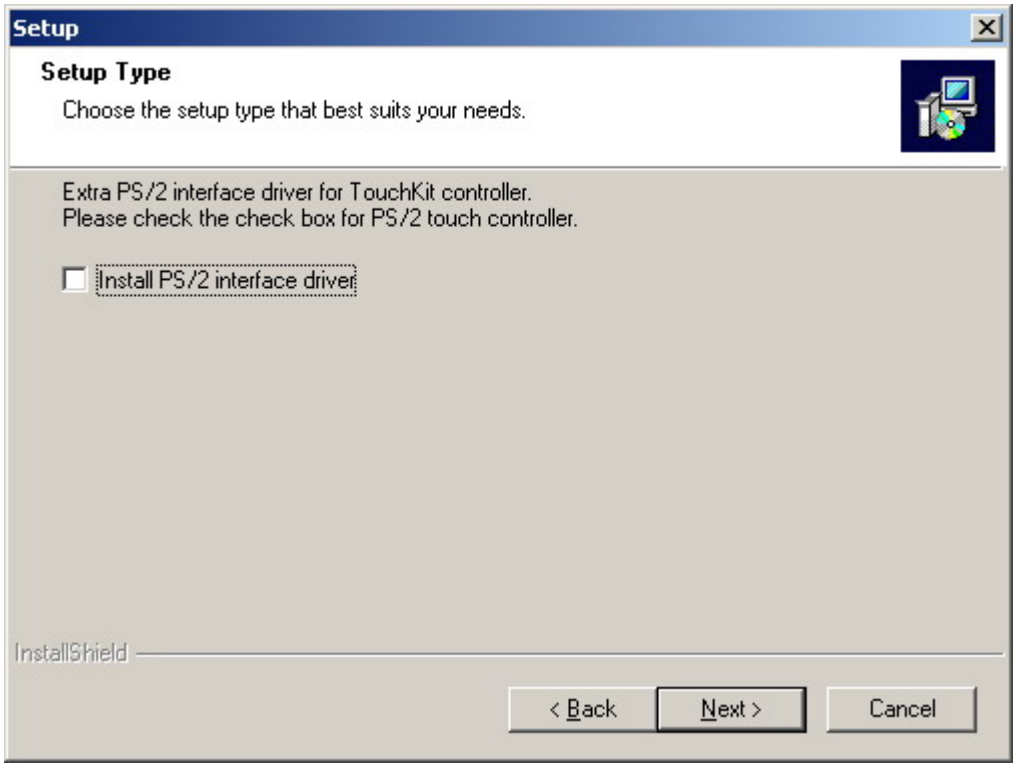

Setup
Setup Type
Choose the setup type that best suits your needs.
Extra PS/2 interface driver for TouchKit controller.
Please check the check box for PS/2 touch controller.
Install PS/2 interface driver
InstallShield
< Back
Next >
Cancel

**Figure 7-12: Install PS/2 Interface Driver**

**Step 9:** Four point calibration options are then selected. Four point calibrations can be done every time a user boots up, during the next time the system boots or never. Select if and when a four-point calibration should be done. Click **NEXT** to continue.

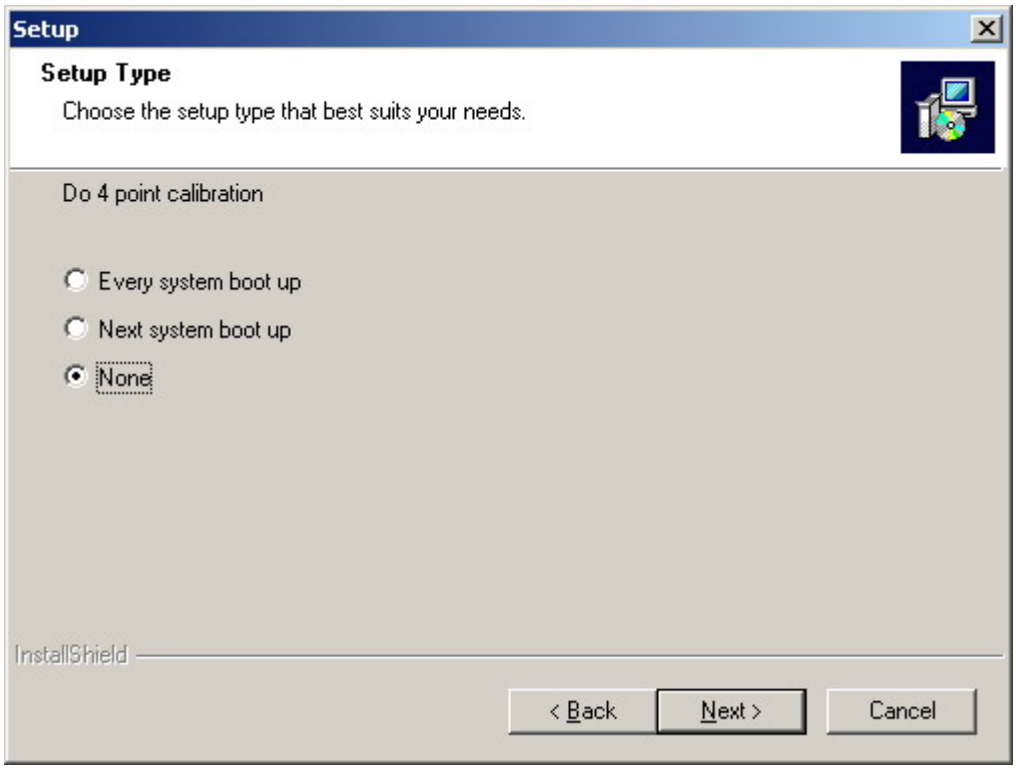



**Figure 7-13: Install PS/2 Interface Driver**

**Step 10:** The user is then prompted to ensure the touch monitor or the RS-232 touch controller is plugged into the system (**Figure 7-14**). Once the touch controller is plugged into the system, click **OK**.

Information
If you are trying to install the USB touch device, please make sure that your touch monitor or touch controller's USB cable is plugged into the computer now.
OK

**Figure 7-14: Touch Monitor/USB Touch Controller Confirmation**

**Step 11:** The user is then prompted to select a file directory in which the touch kit controller is installed (**Figure 7-15**). The default directory is “C:\Program Files\TouchKit.” If a different folder must be used, select browse and then select the folder. Once the folder is selected, click **NEXT** to continue.

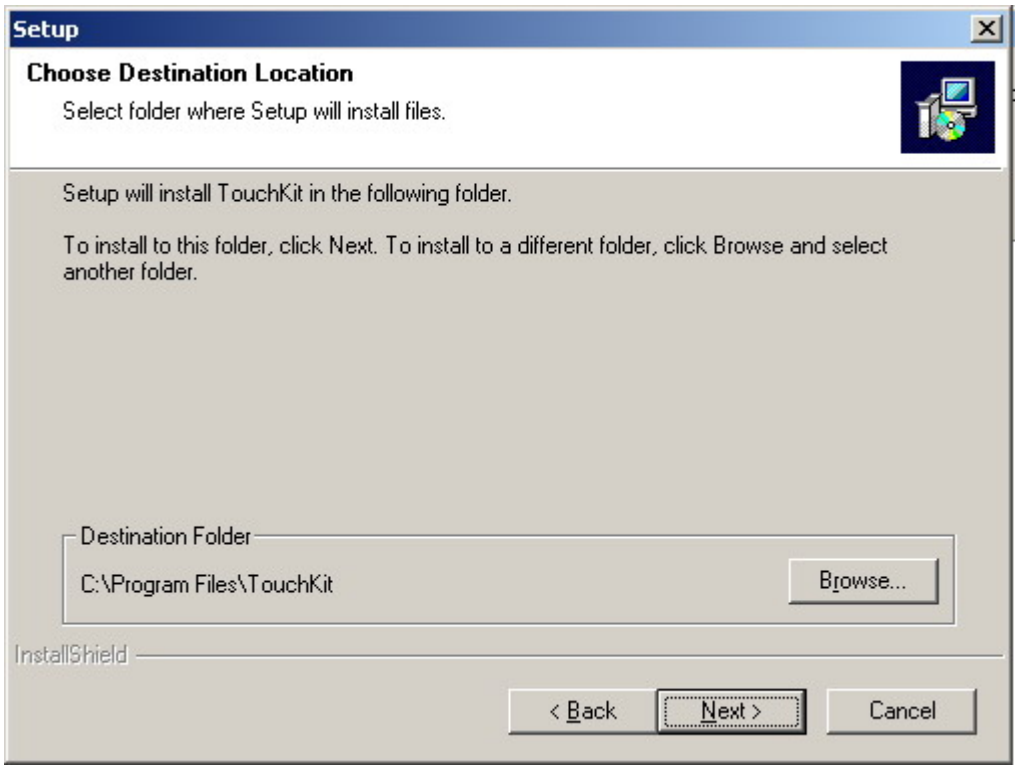

Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install TouchKit in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\TouchKit
Browse...
InstallShield
< Back
Next >
Cancel

**Figure 7-15: Controller Installation Directory**

**Step 12:** The user is then prompted to select a file directory in which the program icons are saved (**Figure 7-16**). The default folder is “TouchKit.” If a different folder must be used, select a folder from the list shown. Once the folder is selected, click **NEXT** to continue.

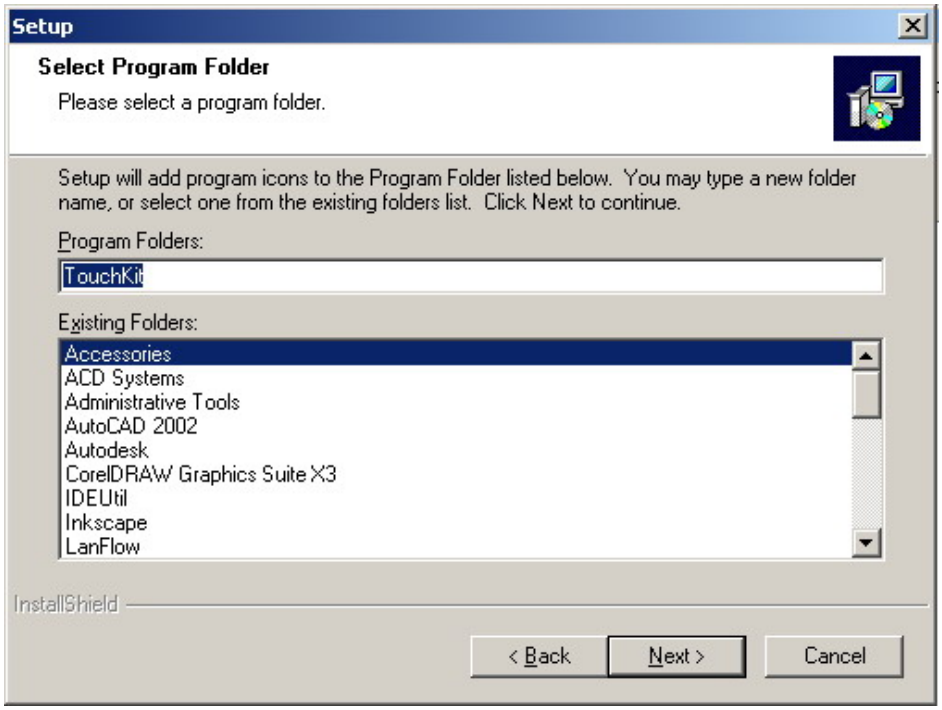



**Figure 7-16: Program Icon Directory**

**Step 13:** The program then starts installing (**Figure 7-17**).

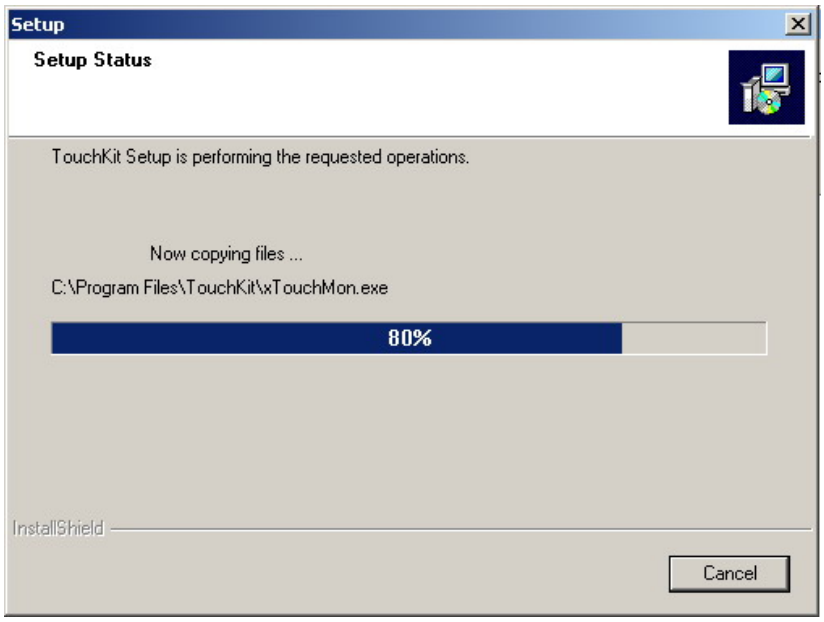



**Figure 7-17: Installing**

**Step 14:** Once the program is finished installing, the user is prompted to restart the computer now or to restart the computer later (**Figure 7-18**). Select when the computer should be restarted and click “**FINISH**” to complete the driver installation procedure.

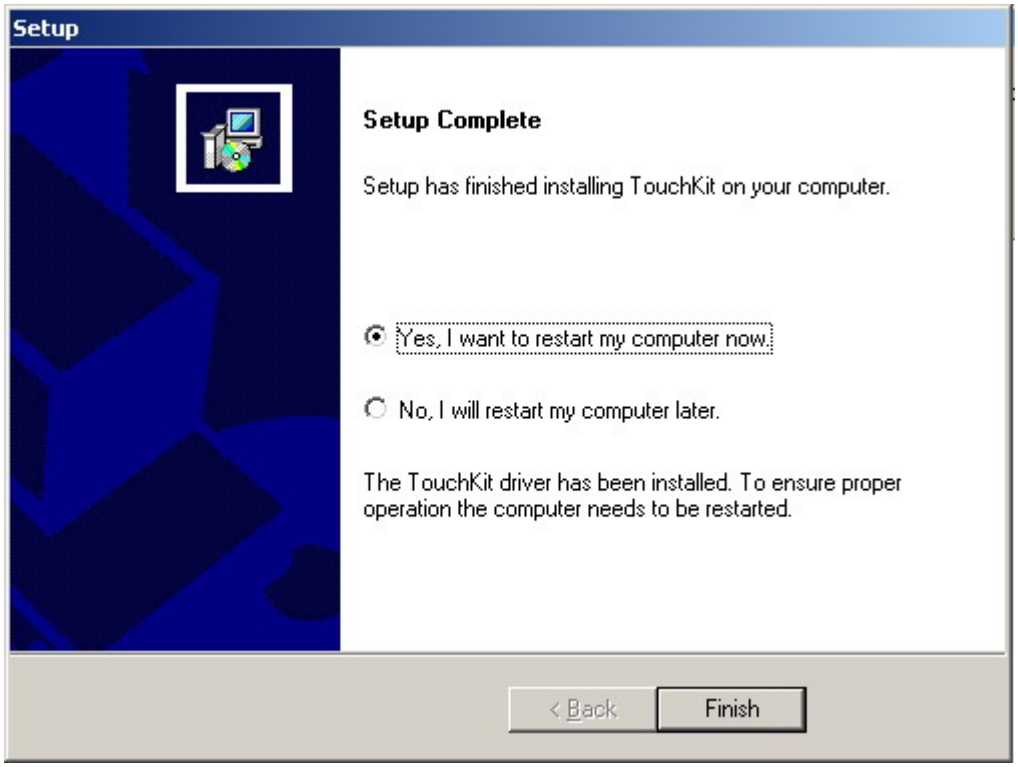

Setup
Setup Complete
Setup has finished installing TouchKit on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
The TouchKit driver has been installed. To ensure proper operation the computer needs to be restarted.
< Back
Finish

**Figure 7-18: Installation Complete**

### 7.3.3 15-inch to 19-inch Touch Panel Driver Configuration

To configure the touch panel driver options, refer to the TouchKit user manual located on the driver installation CD.

## 7.4 Calibrating the Touch Screen

To calibrate the touch screen cursor with the motion of the touch screen pen (or finger), please follow the steps below:

**Step 1:** Make sure the system is properly connected through an RS-232 or a USB interface to the Afolux monitor.

**Step 2:** Make sure the touch screen driver is properly installed.

**Step 3:** Locate the PenMount Monitor icon in the bottom left corner of the screen.

**Figure 7-19: PenMount Monitor Icon**

**Step 4:** Click the icon. A pop up menu appears. See **Figure 7-20**.

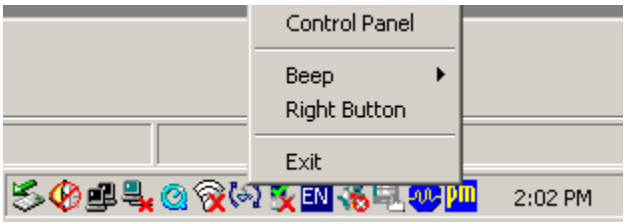



**Figure 7-20: PenMount Monitor Popup Menu**

**Step 5:** Click Control Panel in the pop up menu shown in **Figure 7-20.**

**Step 6:** The configuration screen in **Figure 7-21** appears.

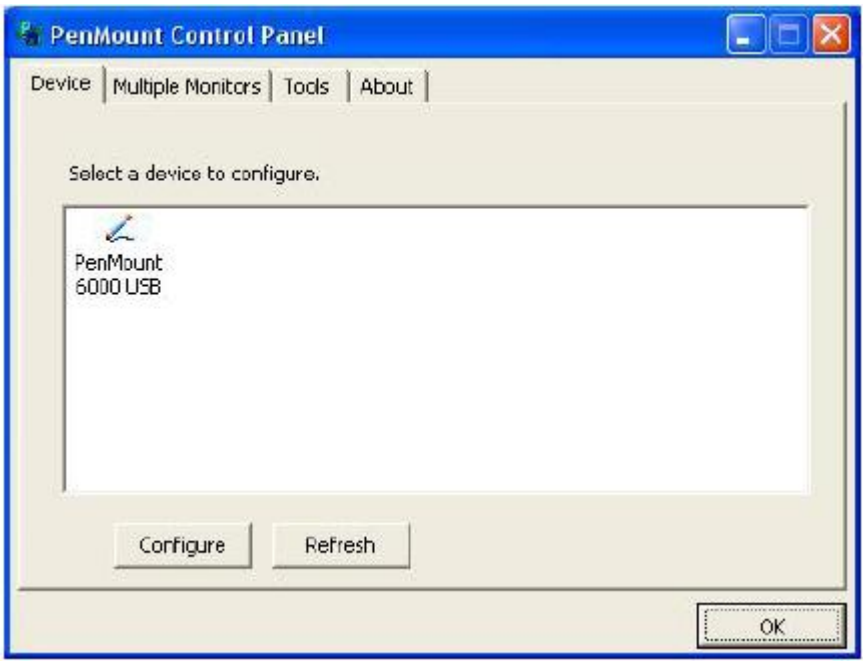



**Figure 7-21: Configuration Screen**

**Step 7:** Double click the PenMount 6000R icon as shown in **Figure 7-21**.

**Step 8:** The calibration initiation screen in **Figure 7-22** appears.

**Step 9:** From **Figure 7-22**, select the Standard_Calibration key in **Figure 7-22**.

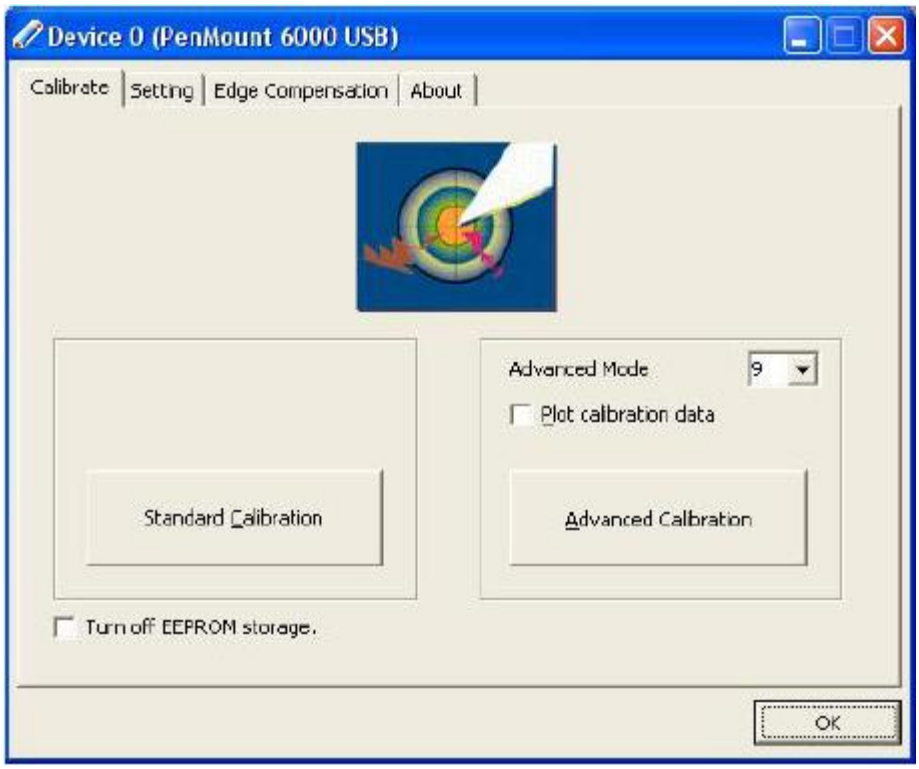



**Figure 7-22: Calibration Initiation Screen**

**Step 10:** The calibration screen in is shown. See **Figure 7-23**.

**Figure 7-23: Calibration Screen**

**Step 11:** Follow the instructions. The user is asked touch the screen at five specified points after which the screen is calibrated.

Chapter

8

# Gasket Replacement

## 8.1 Gasket Replacement

A gasket used for a long time may gradually lose its ability to protect the monitor from fluids and vapors; scratches or dirt may also accumulate. It is recommended that the gasket be replaced yearly.

**NOTE:**

If the monitor is mounted vertically, first remove it and place it on a flat, level surface with the display screen facing down before changing the gasket.

**Step 1:** Remove the old gasket from the sides of the monitor.

**Step 2:** Attach the new gasket to the monitor. Make sure the gasket fits precisely into the groove along the edges of the monitor’s front panel (**Figure 8-1**).

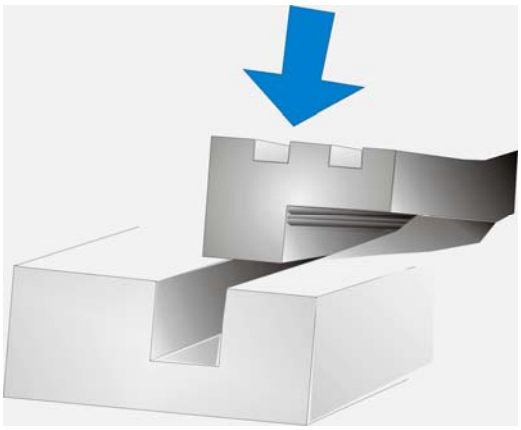


**Figure 8-1: Gasket Replacement**

**NOTE:**

Compliance with the IP 64 standard depends on correct installation of the gasket. Be sure to check that the gasket is properly installed after changing it.

Appendix

A

# Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL series monitor.

## A.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

### A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the AFL series monitor is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the AFL series monitor is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the AFL series monitor chassis is opened when the AFL series monitor is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the AFL series monitor.
- ***If considerable amounts of dust, water, or fluids enter the AFL series monitor***, turn off the power supply immediately, unplug the power cord, and contact the AFL series monitor vendor.
- **DO NOT**:
  - Drop the AFL series monitor against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

### A.1.2 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the installation of the AFL series monitor may result in permanent damage to the AFL series monitor and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL series monitor. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL series monitor is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

## A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL series monitor, please follow the guidelines below.

### A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL series monitor, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the AFL series monitor does not require cleaning. Keep fluids away from the AFL series monitor interior.
- Be cautious of all small removable components when vacuuming the AFL series monitor.
- Turn the AFL series monitor off before cleaning the AFL series monitor.
- Never drop any objects or liquids through the openings of the AFL series monitor.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the AFL series monitor.
- Avoid eating, drinking and smoking within vicinity of the AFL series monitor.

### A.2.2 Cleaning Tools

Some components in the AFL series monitor may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the AFL series monitor.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the AFL series monitor.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the AFL series monitor.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the AFL series monitor as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the AFL series monitor. Dust and dirt can restrict the airflow in the AFL series monitor and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

# Certifications

## B.1 RoHS Compliant

All models in the AFL LCD monitor series comply with the Restriction of Hazardous Materials (RoHS) Directive. This means that all components used to build the industrial monitors and the monitor itself are RoHS compliant.

The RoHS Directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

## B.2 IP 64 Compliant Front Panel

The front panels on all five models in the AFL series LCD monitor series have an ingress protection rating (IP) of 64, IP 64. The front panels are protected from dust particles and water spray.

Appendix

C

# Auto-Dimming

## C.1 Auto-Dimming Configurations

The AFL series industrial monitor features an auto-dimming LCD that can automatically adjust the backlight brightness according to the ambient light. If the auto-dimming function is turned on, the backlight turns brighter when the ambient illuminance is high. The backlight dims automatically when the ambient illuminance level is low.

The SI unit of illuminance is “lux.” Lux measures the intensity of light. **Table B-1** lists the illuminance (LUX measurement) of everyday light sources.

| Light Source | Brightness (LUX) |
|---|---|
| **Night without moonlight** | <10 |
| **Night with moonlight** | <100 |
| **Office desk lighting** | 500~1000 |
| **Overcast day** | 1000~2000 |
| **Sunny day** | 10,000 |
| **Direct sunlight** | 100,000 |

**Table C-1: LUX Measurement of Everyday Light Source**

### C.1.1 Default Settings

The auto-dimming default settings of the AFL series industrial monitor is shown in **Figure C-1** below. When the sensor detects the ambient illuminance as 2000 LUX or above, the AFL series industrial monitor adjusts the LCD brightness to 100%.

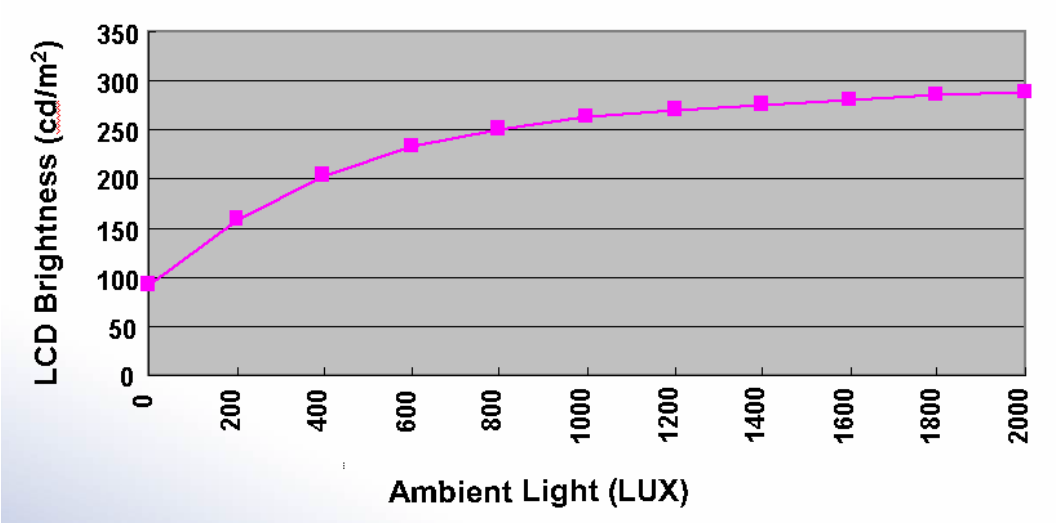



**Figure C-1: Default Linearity of the LCD Backlight and Ambient Light**

## C.1.2 OSD Control

The auto-dimming configurations are shown in **Section 6.2.5.2**.

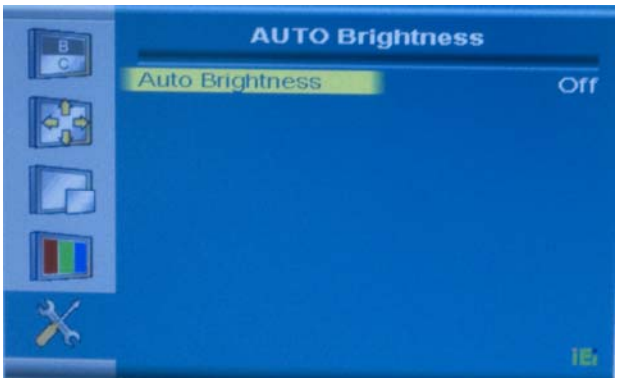



**Figure C-2: Auto-Dimming Configurations Menu**

Appendix

D

# smartOSD

## D.1 IEI smartOSD Quick Installation Guide

IEI smartOSD is a proprietary On-Screen-Display (OSD) software solution from IEI that enables easy, remote monitor setting adjustments in a Windows environment. IEI smartOSD delivers excellent performance and provides more flexibility than the typical OSD hardware solutions when adjusting a monitor. smartOSD also allows monitor settings such as brightness, contrast, screen position, size, color gain to be read and changed over normal video cable (VGA or DVI). The smartOSD function is only supported by revision 1.1 models and above.

## D.2 Pre-installation Notice

Before installing smartOSD software, please make sure one of the following operating systems is installed:

- Windows 95
- Windows NT 4.0
- Windows 98
- Windows 2000
- Windows 2003
- Windows XP
- Windows Vista

## D.3 Software Illustration

The table below shows the smartOSD menu structure for all IEI LCD monitors.

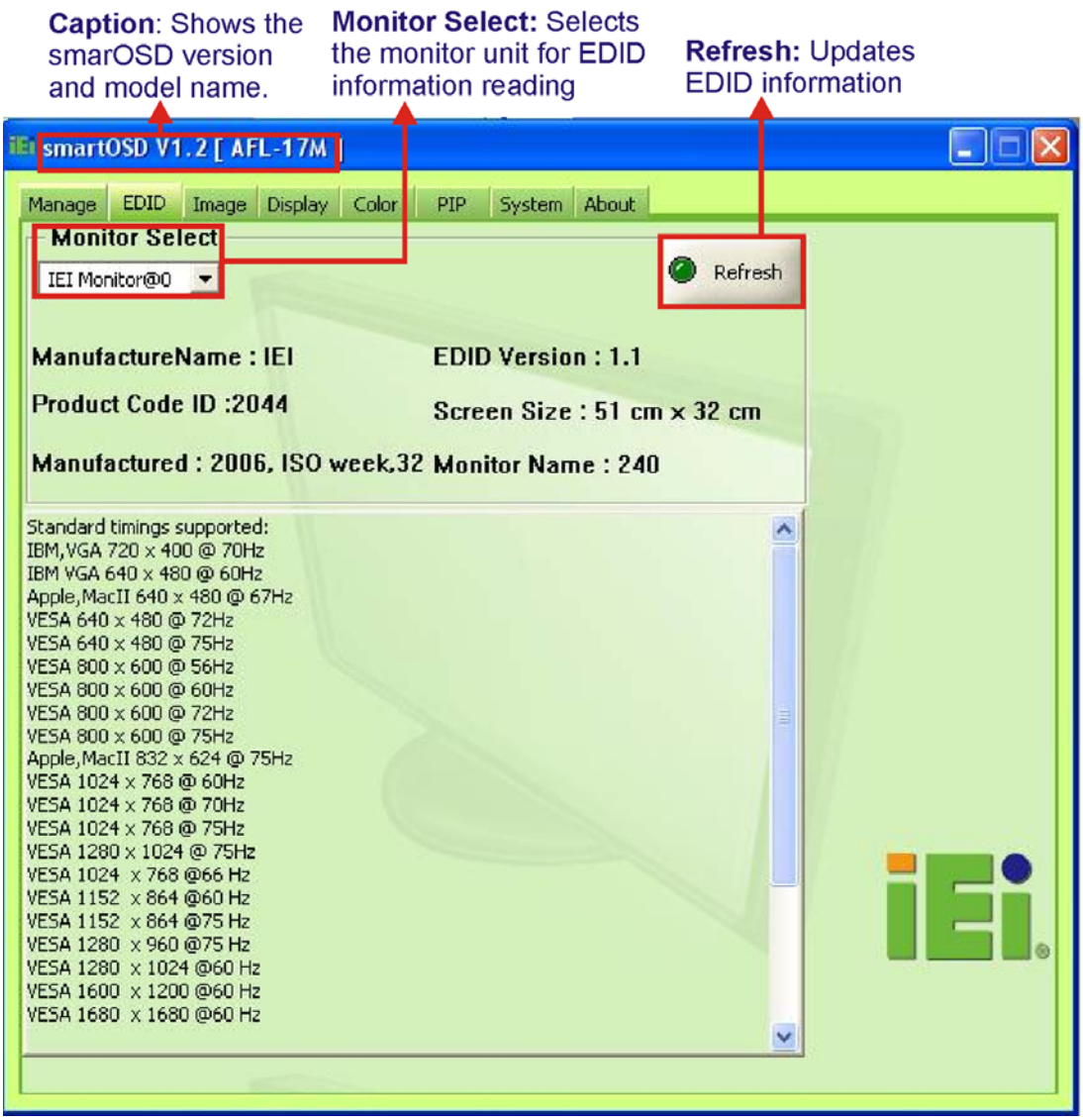
**NOTE:**

To update the display setting status immediately, push the refresh button on every page

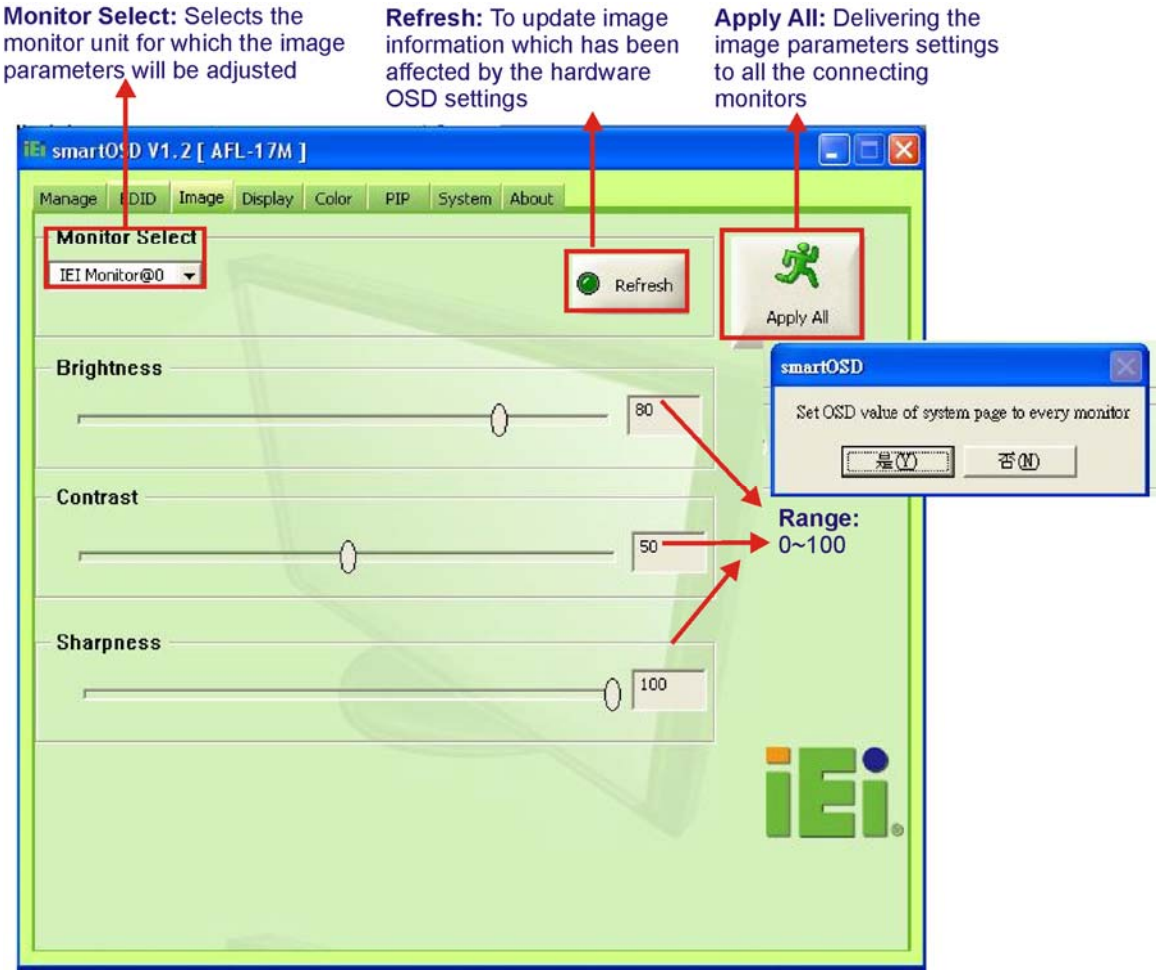
To turn the system on, press ALT + P.

| Item | Elements |
|---|---|
| EDID | EDID contains basic information about the monitor and its capabilities. |
| Image | Brightness |
| | Contrast |
| | Sharpness |
| Display | Auto Adjust |
| | Phase |
| | Clock |
| Color | Auto Color |
| | Color Temperature |
| | Gamma |
| PIP | PIP |
| | PIP Source Input |
| | PIP Size |
| System | Monitor Power Control<br>(Note2) |
| | Auto Brightness |
| | Main Source Input |
| | Volume |
| | Misc/OSD Lock/OSD Unlock |
| | Mute |
| Management | Memory (Save/Load) |
| | Power Management |

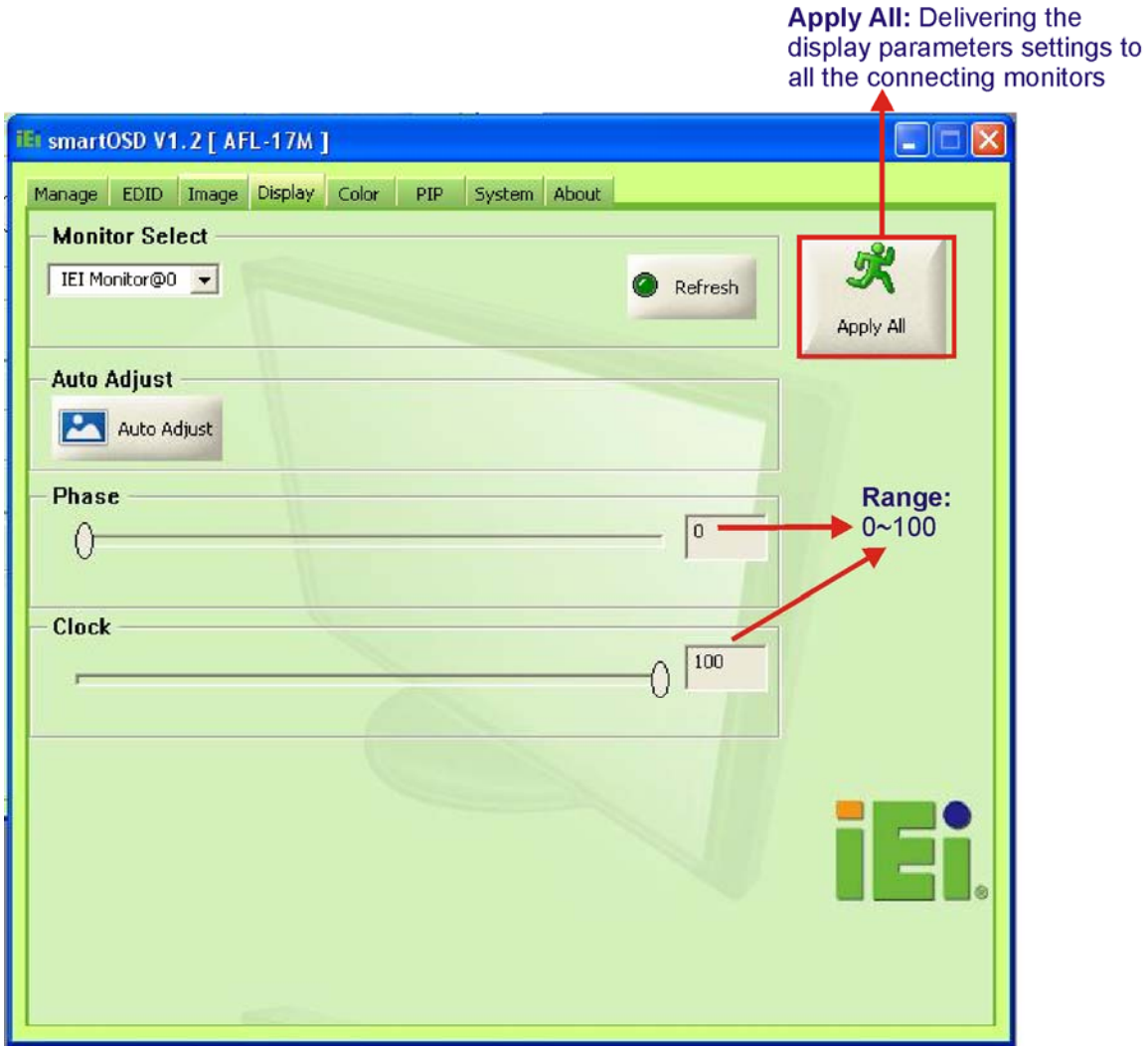
### D.3.1 EDID Page


Caption: Shows the smarOSD version and model name.
Monitor Select: Selects the monitor unit for EDID information reading
Refresh: Updates EDID information
smartOSD V1.2 [ AFL-17M ]
Manage
EDID
Image
Display
Color
PIP
System
About
Monitor Select
IEI Monitor@0
Refresh
ManufactureName : IEI
EDID Version : 1.1
Product Code ID :2044
Screen Size : 51 cm x 32 cm
Manufactured : 2006, ISO week.32
Monitor Name : 240
Standard timings supported:
IBM,VGA 720 x 400 @ 70Hz
IBM VGA 640 x 480 @ 60Hz
Apple,MacII 640 x 480 @ 67Hz
VESA 640 x 480 @ 72Hz
VESA 640 x 480 @ 75Hz
VESA 800 x 600 @ 56Hz
VESA 800 x 600 @ 60Hz
VESA 800 x 600 @ 72Hz
VESA 800 x 600 @ 75Hz
Apple,MacII 832 x 624 @ 75Hz
VESA 1024 x 768 @ 60Hz
VESA 1024 x 768 @ 70Hz
VESA 1024 x 768 @ 75Hz
VESA 1280 x 1024 @ 75Hz
VESA 1024 x 768 @66 Hz
VESA 1152 x 864 @60 Hz
VESA 1152 x 864 @75 Hz
VESA 1280 x 960 @75 Hz
VESA 1280 x 1024 @60 Hz
VESA 1600 x 1200 @60 Hz
VESA 1680 x 1680 @60 Hz

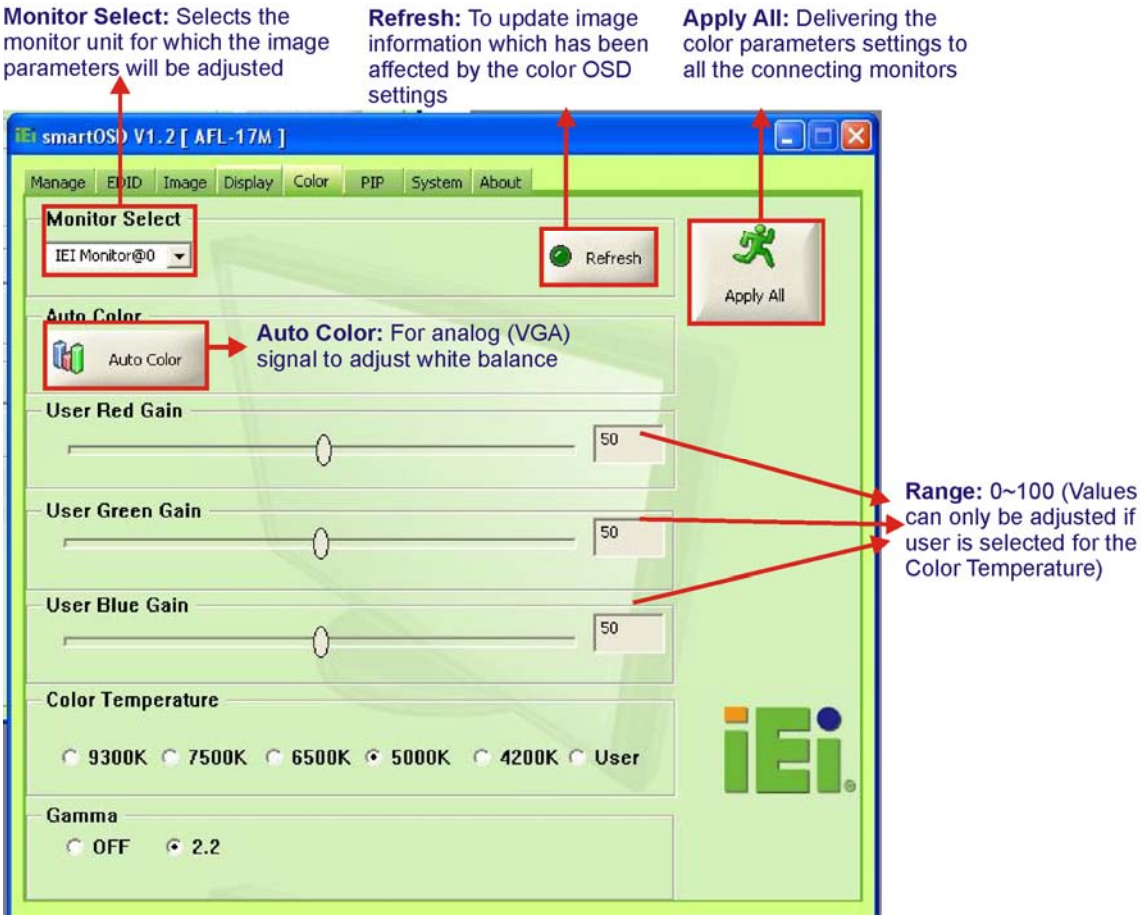
### D.3.2 Image Page



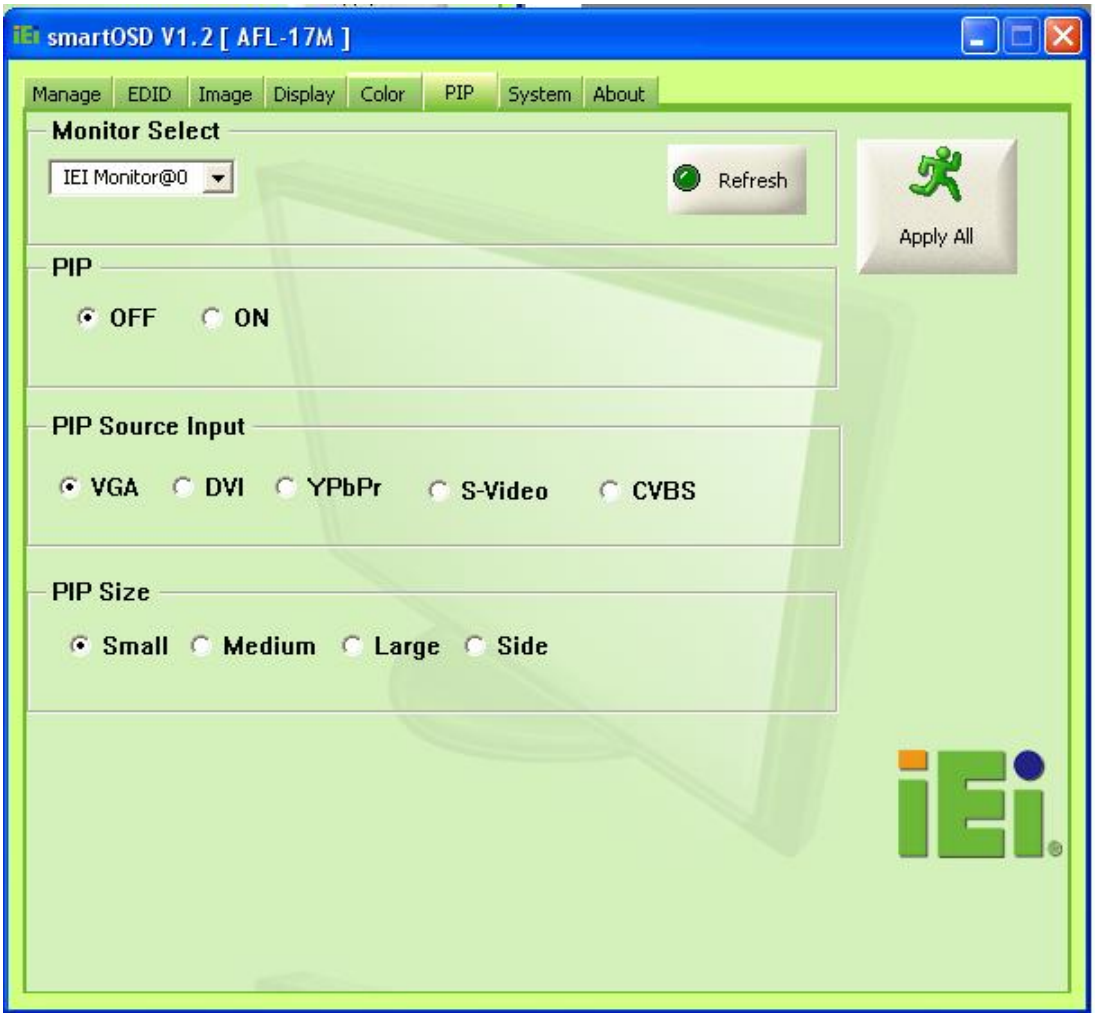
### D.3.3 Display Page (for analog signal)



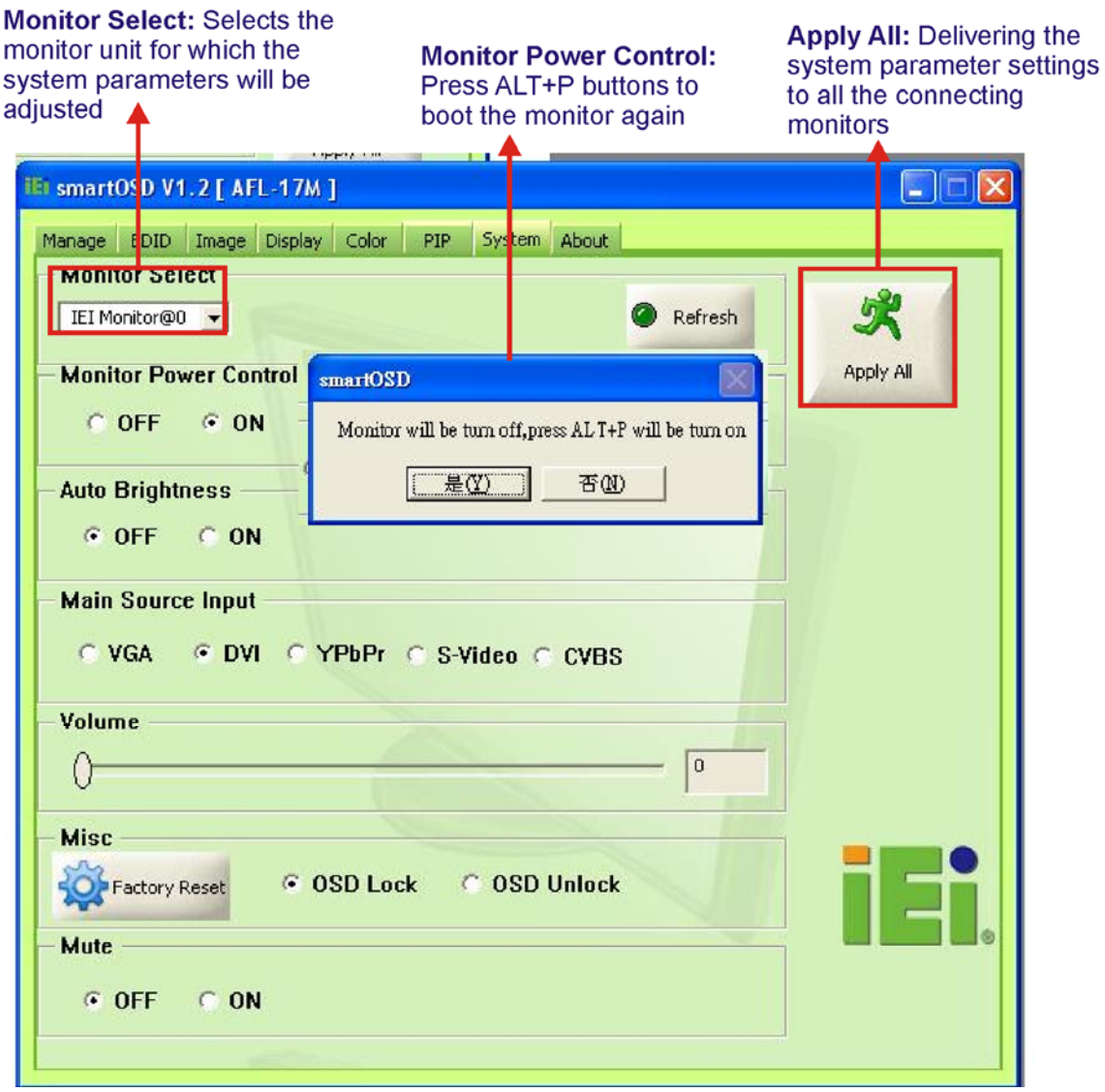
### D.3.4 Color Page



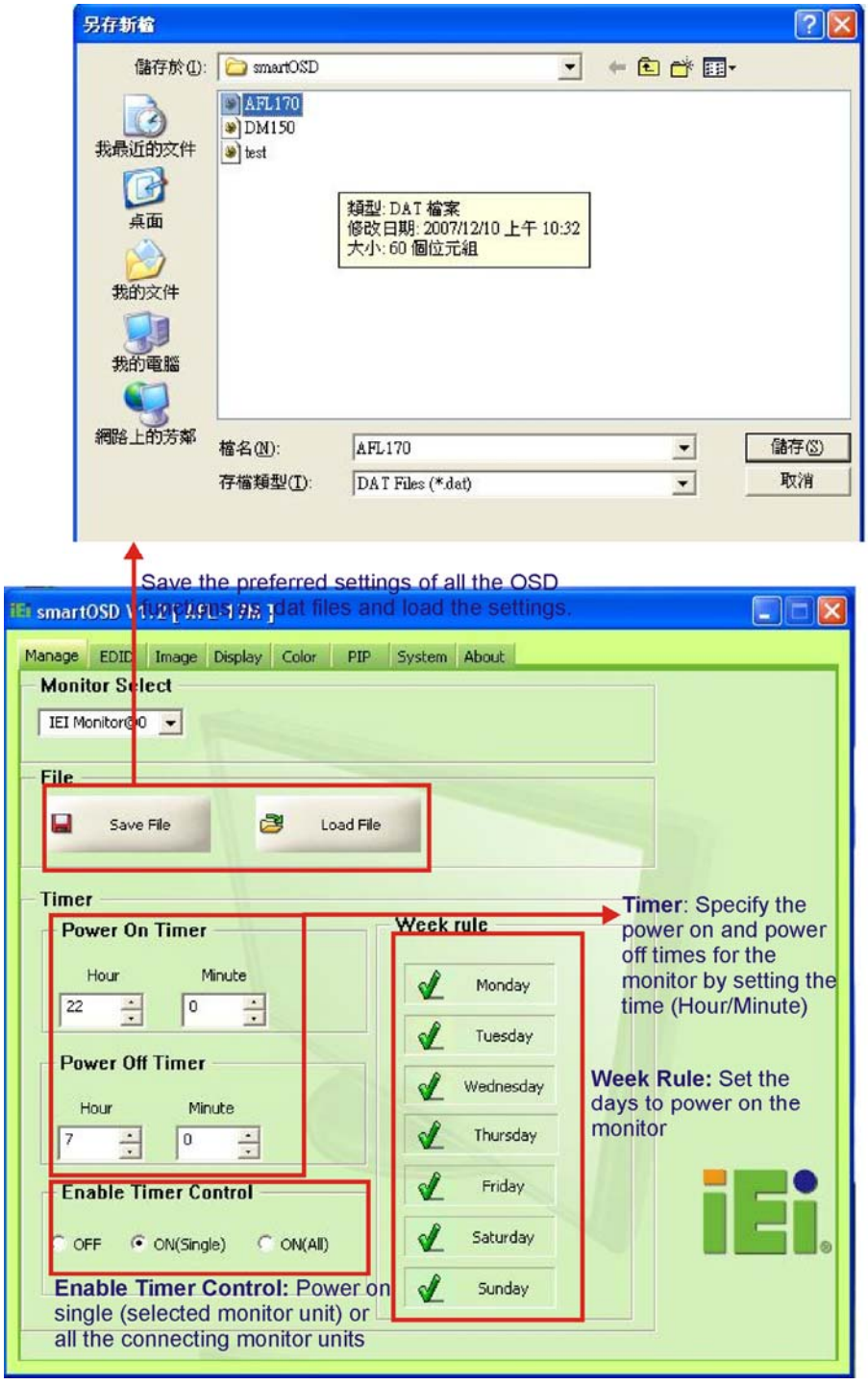
### D.3.5 PIP Page (For MDM/AFLUX series)



### D.3.6 System Page



### D.3.7 User Page



### D.3.8 About Page

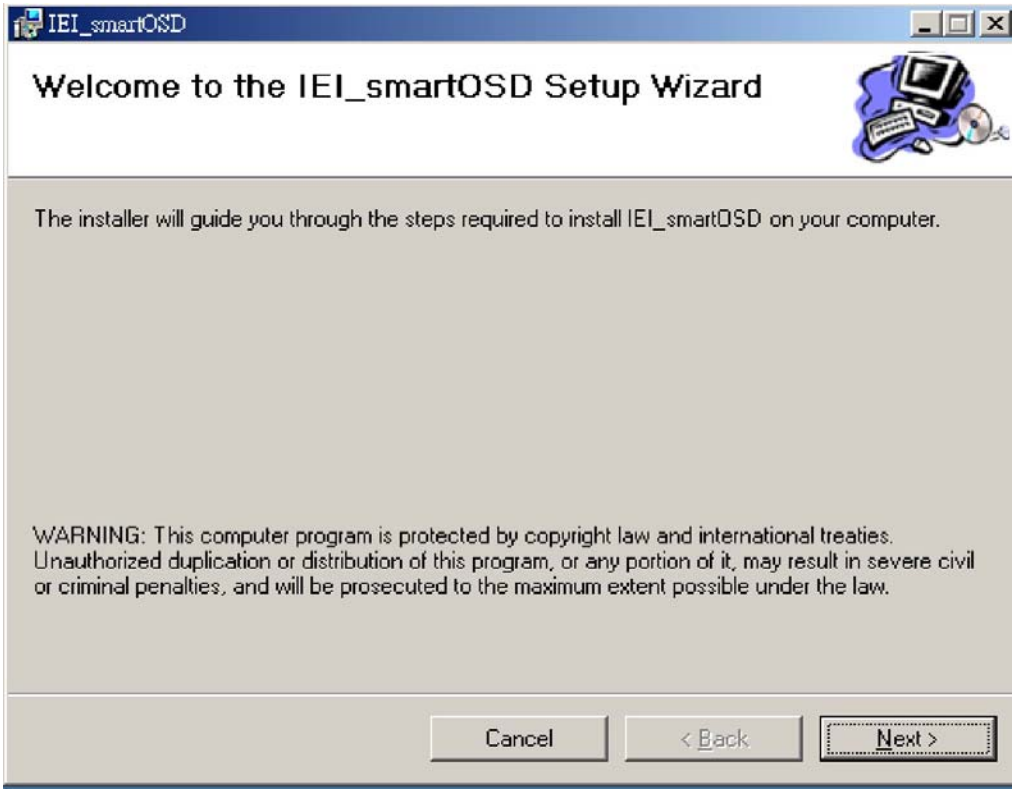
## D.4 Install Software

To install the software, please follow the steps below:

**Step 1:** Follow the instructions from the interactive installer to install the IEI smartOSD on the system.

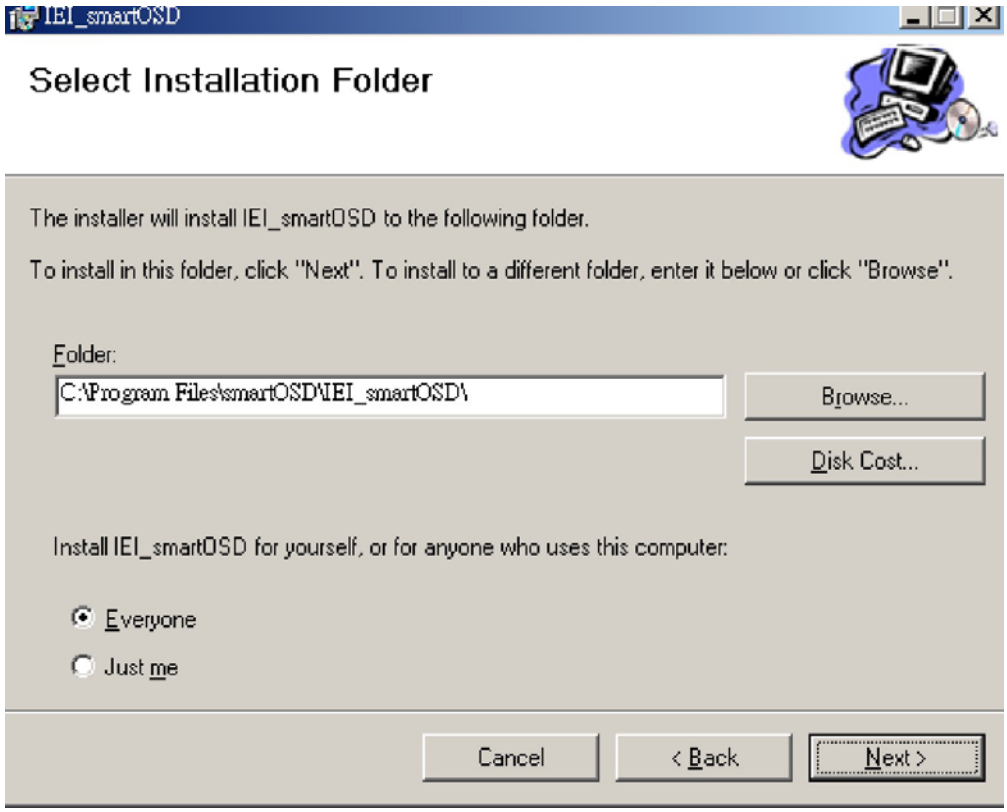
**Step 2:** Insert the installation disk that came with the system and open the installation file.

**Step 3:** The welcome screen shown below appears.


IEI_smartOSD
Welcome to the IEI_smartOSD Setup Wizard
The installer will guide you through the steps required to install IEI_smartOSD on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

**Step 4:** Click **Next** to continue.

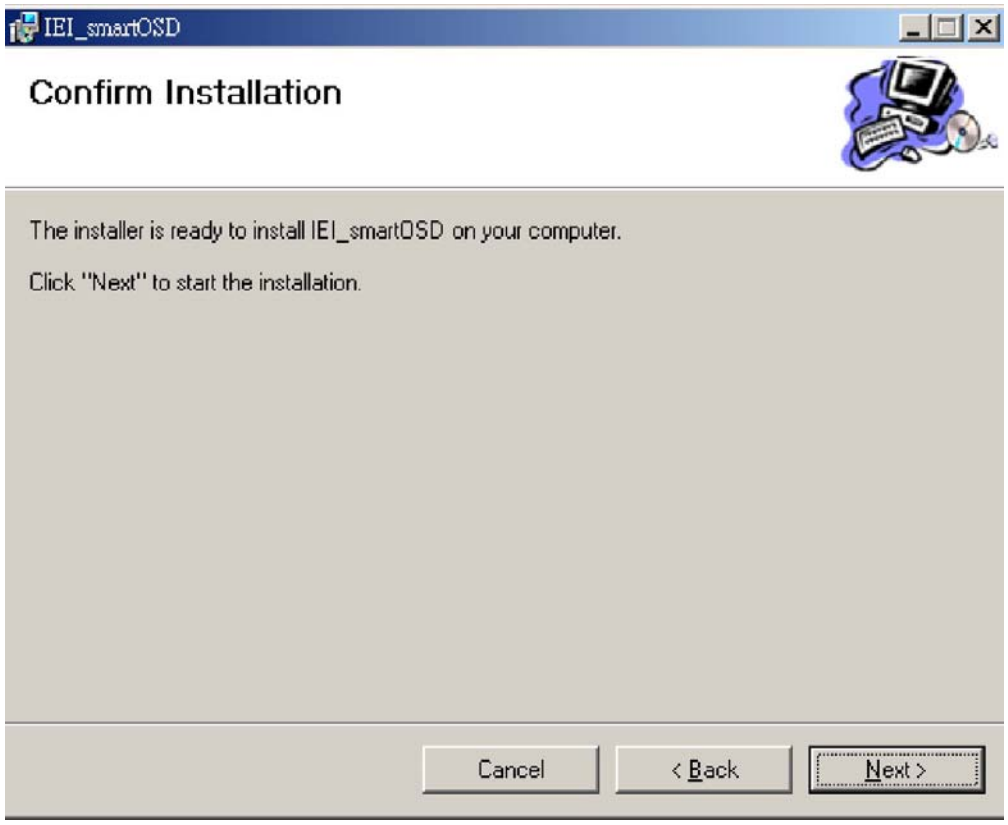
**Step 5:** The screen below appears.


IEI_smartOSD
Select Installation Folder
The installer will install IEI_smartOSD to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\smartOSD\IEI_smartOSD\
Browse...
Disk Cost...
Install IEI_smartOSD for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

**Step 6:** Select the installation folder from the screen shown above.

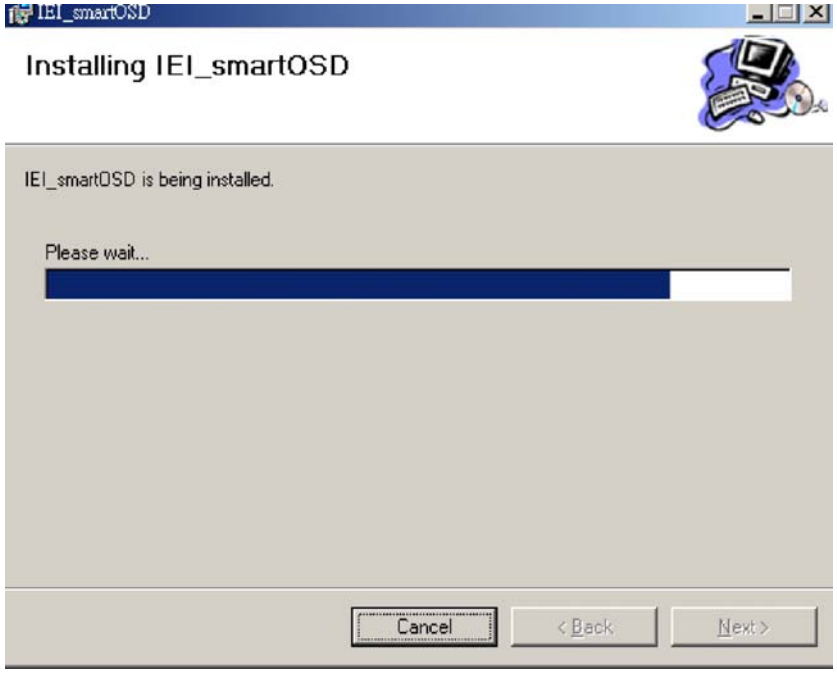
**Step 7:** Click **Next** to continue.

**Step 8:** The screen shown below appears.

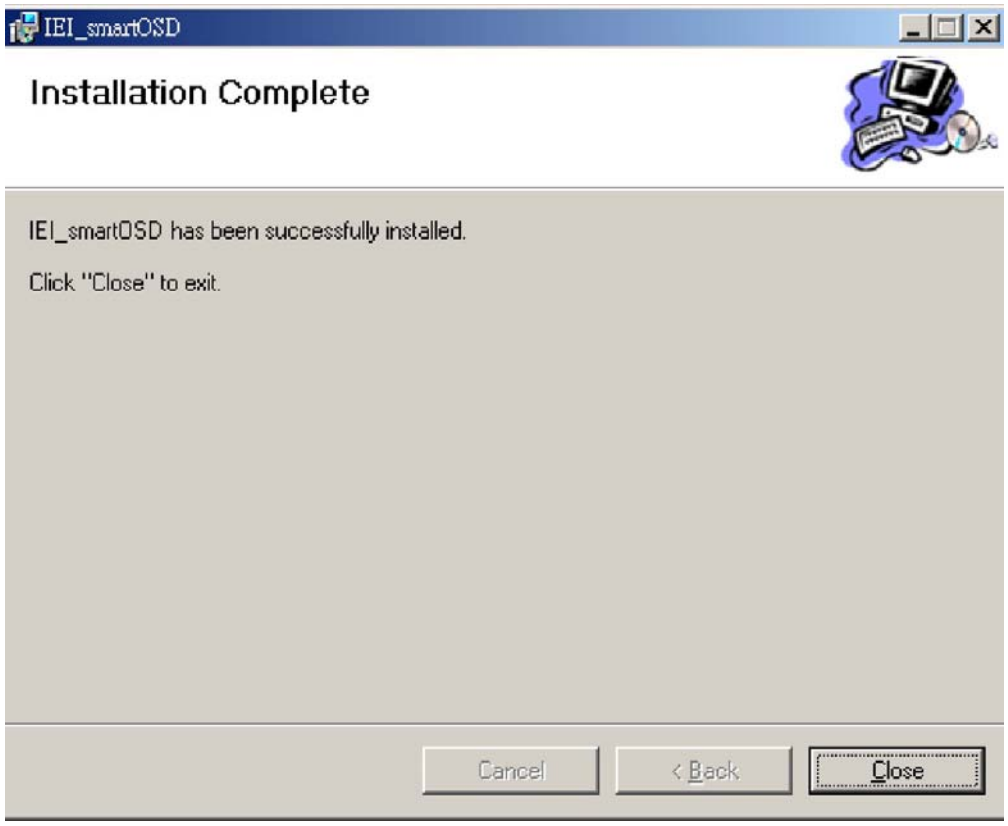

IEI_smartOSD
Confirm Installation
The installer is ready to install IEI_smartOSD on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

**Step 9:** Confirm the installation by clicking **Next** in the screen above.

**Step 10:** The program starts to install and the progress bar shown below appears.



**Step 11:** When the installation is complete the screen below appears.




**Step 12:** Click **Close** in the screen above.

**Step 13:** After quick setup is complete, the IEI smartOSD wizard logo appears on the desktop as shown in the screen below.

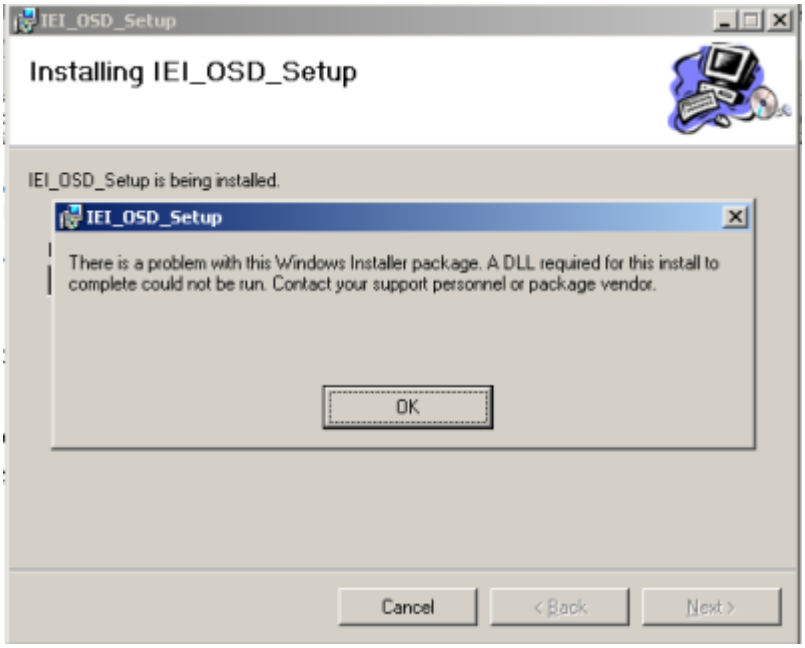
**Step 14:** To access the smartOSD, click the smartOSD wizard logo.

NOTES
我的文件
我的電腦
網路上的芳鄰
資源回收筒
smartOSD

## D.5 smartOSD FAQ

For troubleshooting, please see the steps below:

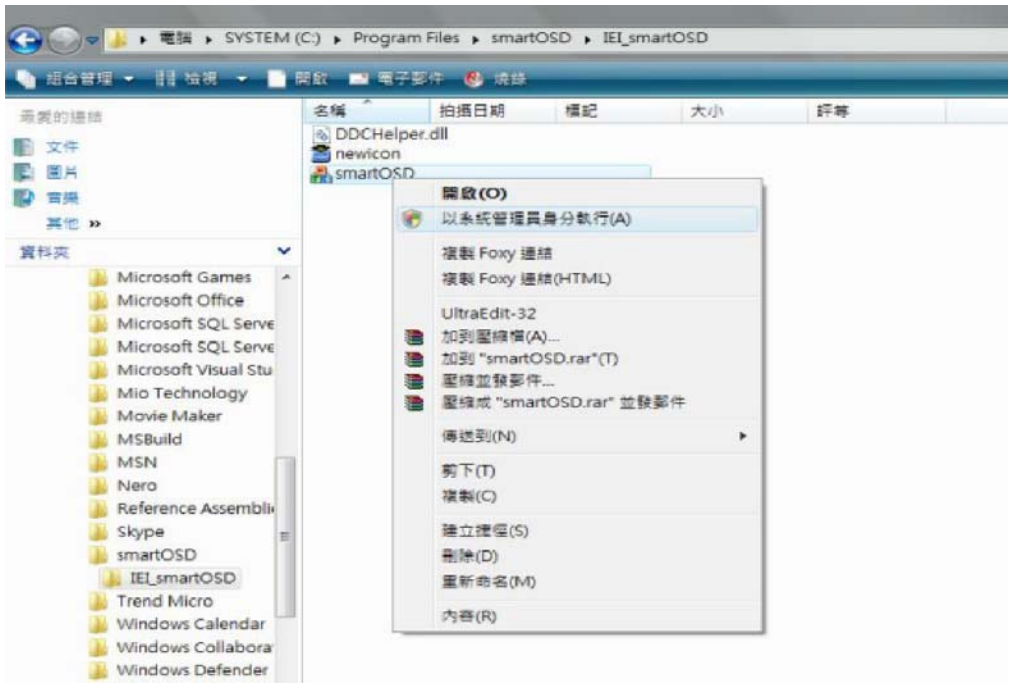
1. ***Installation fails under Windows 2000 and shows following image***:


IEI_OSD_Setup
Installing IEI_OSD_Setup
IEI_OSD_Setup is being installed.
IEI_OSD_Setup
There is a problem with this Windows Installer package. A DLL required for this install to complete could not be run. Contact your support personnel or package vendor.
OK
Cancel
< Back
Next >

- ***Solution***: Download and install service pack Windows Installer 3.1

2. ***Installation fail under Vista while showing following image***:

- ***Solution***: Install smartOSD.exe as the administrator authority




3. ***The Model Fail error message shown below appears***.

- ***Solution***: smartOSD only supports firmware version 2.0 and following versions.

4. ***The DDC port fail error message shown below appears***.

smartOSD
Check DDC port fail,SW will be closed
1:Check VGA or DVI cable
2:Check use IEI monitor
3:Check OSD DDC port setting
4:Check OSD process is busy
確定

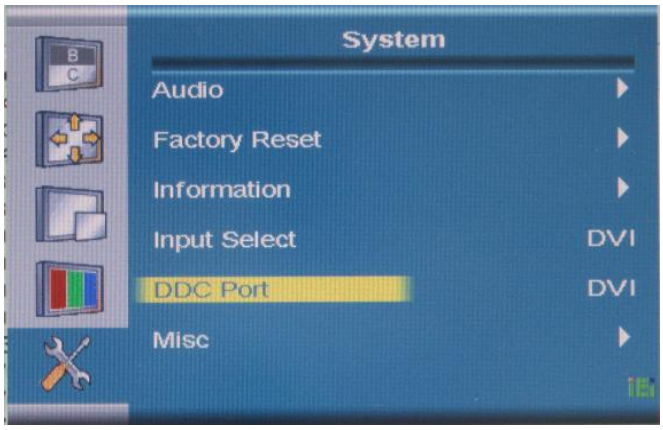
- ***Solutions***:

i. Check VGA or DVI cable

ii. Check an IEI monitor is being used

iii. Make sure the version is version 2.3 for the AFOLUX/MDM series and version 1.5 for the DM/TDM/SRM/LCD-KIT series that have the smartOSD functions

iv. Check the system is connected to the correct port. That is, the system should be connected to the DDC port. (Only for AFOLUX and MDM series)




v. Check if the OSD control status is busy. A busy signal may cause the signal message for a short time.

Appendix

E

# Hazardous Materials Disclosure

## E.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

| Part Name | Toxic or Hazardous Substances and Elements | | | | | |
|---|---|---|---|---|---|---|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (CR(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) |
| Housing | X | O | O | O | O | X |
| Display | X | O | O | O | O | X |
| Printed Circuit Board | X | O | O | O | O | X |
| Metal Fasteners | X | O | O | O | O | O |
| Cable Assembly | X | O | O | O | O | X |
| Fan Assembly | X | O | O | O | O | X |
| Power Supply Assemblies | X | O | O | O | O | X |
| Battery | O | O | O | O | O | O |

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有”环境友好使用期限”的标签，此期限是估算这些物质”不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 壳体 | X | O | O | O | O | X |
| 显示 | X | O | O | O | O | X |
| 印刷电路板 | X | O | O | O | O | X |
| 金属螺帽 | X | O | O | O | O | O |
| 电缆组装 | X | O | O | O | O | X |
| 风扇组装 | X | O | O | O | O | X |
| 电力供应组装 | X | O | O | O | O | X |
| 电池 | O | O | O | O | O | O |

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。